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ABSTRACT

This report summarizes the results of a program initiated in July of 1967 that was based on the findings and recommendations of the First Phase Report, which was completed in June of 1967. Seventeen different school districts participated in systems programs, and 20 new schools and additions were completed during the 1968-69 school year. Evaluative studies of these schools by members of the Schoolhouse Systems Project indicate an agreement on the superiority of these buildings. Some of the improvements include a better learning environment, more functional space, and space that has a higher degree of future adaptability. In addition, systems construction costs were no more than those of conventionally designed buildings. Construction time was reduced significantly for systems schools--20 conventionally designed elementary schools took 14 percent longer to build than the 14 systems elementaries; eight conventionally designed secondary schools took 60.5 percent longer to build than the eight systems secondaries. Problems associated with the systems approach and recommendations for future building programs are discussed. Five appendixes contain a clarification of terms a list of all systems projects, the cost data for each school, the construction cost data, and a proposed construction program for 1970-73. A related document is ED 032 733. (Author/MLF)

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SECOND PHASE

# Report

# Florida SCHOOLHOUSE SYSTEMS PROJECT

DEPARTMENT OF EDUCATION &
EDUCATIONAL FACILITIES LABORATORIES, INC.

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# SECOND PHASE REPORT

## FLORIDA SCHOOLHOUSE SYSTEMS PROJECT

SPONSORED

BY

FLORIDA STATE BOARD OF EDUCATION

AND

EDUCATIONAL FACILITIES LABORATORIES, INC.

FLOYD T. CHRISTIAN

COMMISSIONER OF EDUCATION

TALLAHASSEE, FLORIDA

JULY, 1970

STATE OF FLORIDA

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# A C K N O W L E D G M E N T S

Many people have contributed to the success of the program and it is impossible to give credit to all.

The architects, engineers and contractors who were involved in the projects should all receive considerable credit.

The Members of the Building Research Advisory Committee, listed on the preceding page, contributed valuable advice and communicated with their respective organizations. Without their support the program could not have succeeded.

The Florida Legislature provided consistent support.

Educational Facilities Laboratories contributed much more than money. Jonathan King, Vice President and Treasurer of EFL, continues to give valuable advice and encouragement when it is most needed.

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# INTRODUCTION

## THE BEGINNING

In the first few months of operation the staff evaluated the School Construction Systems Development (SCSD) project, which was the only one in North America with buildings completed. Staff members visited twelve school buildings in California, Nevada, Illinois and Georgia, and one commercial building in Georgia, all built using at least four major subsystems developed for the SCSD Program.

During this period the staff also met in fifteen school districts in Florida on request and visited at least one recently completed building in each district. The conclusion was that the SCSD components offered a learning environment which was superior to that of 70 to 80 percent of the buildings in Florida and the potential for adapting the interiors was better than any of the schools including community colleges.

Architects and educators who are members of the development team, and architects and educators who were users of the subsystems in buildings were interviewed. The process and procedures were evaluated as well as the building products.

For several reasons the staff decided to consider adapting the SCSD Program. A review of user needs as compared to that of California indicated that the education programs in Florida and California were similar and manifesting the same trends. Buildings were visited in diverse locations to see that products were available and flexible design solutions were possible. Boards of education, administrators, and architects seemed less hesitant to join a program which would produce results quickly, and from which they could withdraw without upsetting a guaranteed market necessary to make the program a success.

The sixty-seven school districts of Florida indicated a potential market of fifteen million dollars of construction with a hoped for completion date of August, 1968 and an interest in using pre-coordinated building components.

The calendar on page 3 is reprinted from the First Phase Report. Actually only six courageous architects, with a total of

three and one-half million dollars of construction, remained in the program to completion of the buildings. With the success of Program 1, Programs 2 and 3 both doubled in size.

## THE RESULTS

Performance specifications can be adapted to meet local conditions related to climate and code requirements in many cases without adverse economic results. For example, Florida does not require structural bracing for seismic load but does require structural bracing for hurricane winds. This type of change is easy to obtain.

Suppliers of materials to meet requirements can be developed rather rapidly by offering successive programs of size as incentive.

Evolutionary change of requirements to improve product quality or performance is also available.

Ideas concerning Program No.4 have changed since 1967. A program using the currently revised SSP Performance Specifications is tentatively scheduled for bidding around January 1, 1971. It will probably be called SSP No.4. User Requirements for K-12 are rewritten and the entire program will be reviewed.

A large, long range, research and development program is needed and justifiable only when something is needed which doesn't exist or if a significant upgrading of quality is desired. Two programs are beginning in Florida that fit this need. A higher education program for community colleges and universities is beginning. "User Requirements" for community colleges are nearly completed. A portable building systems program will begin soon and "User Requirements" for the program are partially completed.

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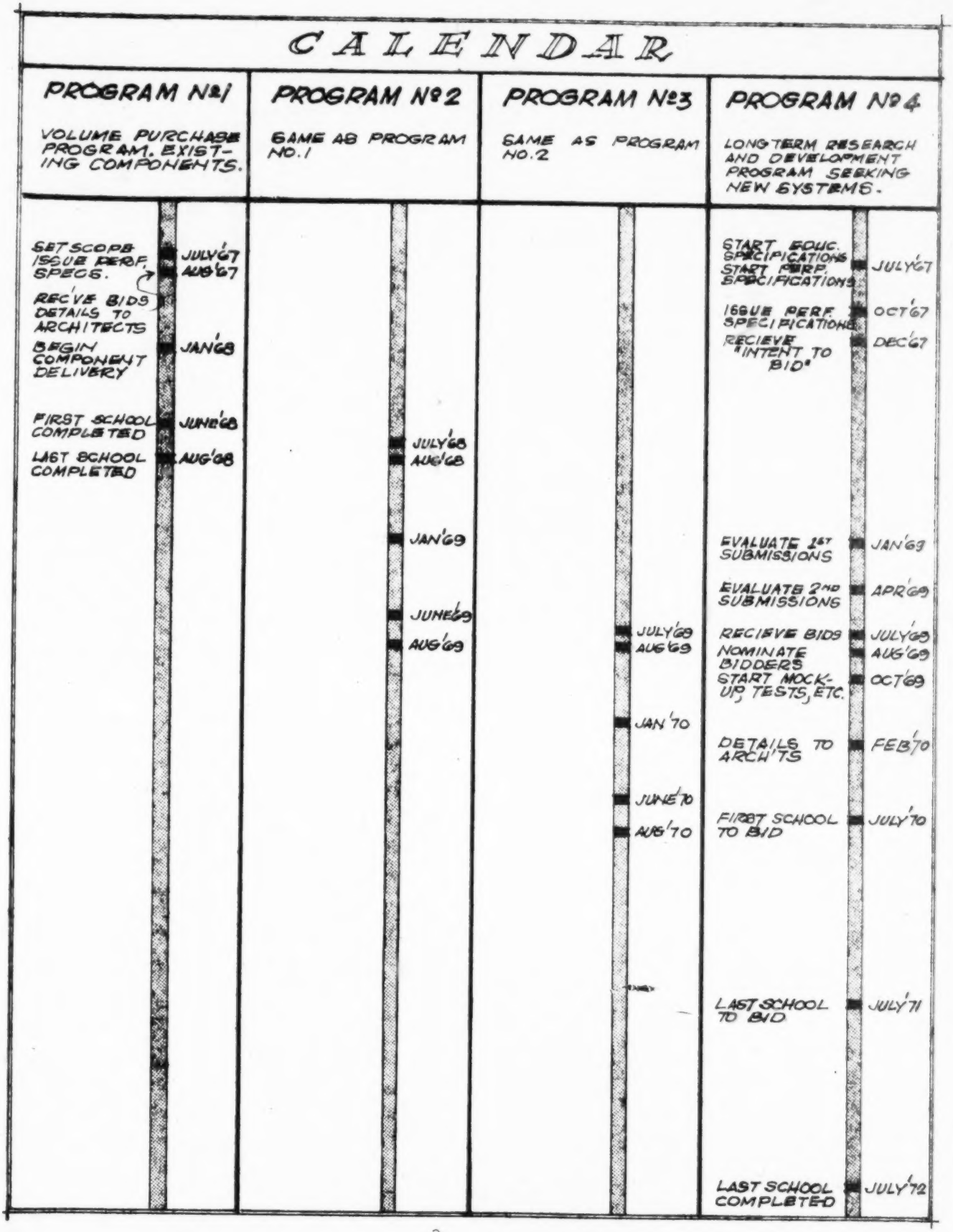
# CALENDAR


PROGRAM №1
VOLUME PURCHASE PROGRAM. EXISTING COMPONENTS.
SET SCOPE
ISSUE PERF. SPECS.
JULY'67
AUG'67
RECIVE BIDS
DETAILS TO ARCHITECTS
BEGIN COMPONENT DELIVERY
JAN'68
FIRST SCHOOL COMPLETED
JUNE'68
LAST SCHOOL COMPLETED
AUG'68
PROGRAM №2
SAME AS PROGRAM NO.1
JULY'68
AUG'68
JAN'69
JUNE'69
AUG'69
PROGRAM №3
SAME AS PROGRAM NO.2
JULY'69
AUG'69
JAN'70
JUNE'70
AUG'70
PROGRAM №4
LONG TERM RESEARCH AND DEVELOPMENT PROGRAM SEEKING NEW SYSTEMS.
START EDUC. SPECIFICATIONS
START PERF. SPECIFICATIONS
JULY'67
ISSUE PERF. SPECIFICATIONS
OCT'67
RECIEVE "INTENT TO BID"
DEC'67
EVALUATE 1ST SUBMISSIONS
JAN'69
EVALUATE 2ND SUBMISSIONS
APR'69
RECIEVE BIDS
JULY'69
NOMINATE BIDDERS
AUG'69
START MOCK-UP, TESTS, ETC.
OCT'69
DETAILS TO ARCH'TS
FEB'70
FIRST SCHOOL TO BID
JULY'70
LAST SCHOOL TO BID
JULY'71
LAST SCHOOL COMPLETED
JULY'72

# O V E R V I E W

A feasibility study was initiated in October, 1966. The First Phase Report was completed June, 1967, and a program based on the findings and recommendations of the report was started July, 1967. The results of the program are summarized in this report.

The objectives of the program were:

1. To build better schools
2. To build more economically
3. To build faster

Prior to October, 1967 there were no systems schools in Florida. Between October, 1967 and October, 1969 thirty separate school projects were bid with a construction budget of approximately $30,000,000 and an area of approximately 2,000,000 square feet. This volume of work is in excess of 20% of the new school construction for that period.

TABLE I

SYSTEMS PROGRAMS

| PROGRAM | SCHOOLS | SYSTEMS BID DATE | SQ. FT. GROSS AREA | TOTAL CONSTRUCTION COST |
|---|---|---|---|---|
| SSP 1-A | 6 | October 1967 | 280,800 | $ 3,615,000.00 |
| LEON | 1 | January 1967 | 68,000 | 950,000.00 |
| SSP 2 | 9 | August 1968 | 485,000 | 8,150,000.00 |
| SSP 3 | 8 | December 1968 | 541,000 | 7,174,000.00 |
| CLAY-DUVAL | 3 | June 1969 | 475,000 | 8,427,910.00 |
| MARTIN | 1 | August 1969 | 61,000 | 916,692.00 |
| ALACHUA - HERNANDO | 2 | October 1969 | 150,000 | 1,079,703.00 |
| TOTAL | 30 | | 2,060,800 | $ 30,313,305.00 |

Seventeen different school districts have participated in systems programs with three districts participating in two separate programs. Twenty-seven architectural firms have participated and three firms have been involved in two programs.

Twenty new schools and additions are completed and in use. All of these schools were visited by the Schoolhouse Systems Project (SSP) staff. Architects and educators are in agreement that the buildings are better. The improvements include a better learning environment, more functional space and space that has a higher degree of future adaptability. In addition, the architects have done very well to meet the challenge of designing exteriors with a variety of aesthetically good solutions.

The challenge was to build better buildings at no additional cost and this has occurred. The systems construction costs were no more than conventionally designed buildings. In fact, during the last year of the period, the systems buildings averaged slightly less than the state average for all new buildings. The question of cost is most controversial and it is difficult to make figures comparable. The only completely comparable figures available are those for the systems bids and general contract costs for systems buildings which are all carefully checked by one person for uniformity. However, evidence exists that on single buildings of less than 100,000 square feet, the systems costs are comparable to conventional construction. When the volume of construction increases to 500,000 square feet, the cost reduces 20% for the prebid systems. On this evidence it would seem wise to offer larger packages of work to bidders when possible.

The challenge to build faster was met with success. Twenty-six conventionally designed elementaries which were funded in the 1968-69 fiscal year were built in an average of 14% longer time than fourteen systems elementaries funded during the same year. Eight conventionally designed secondaries funded during the same period were built in an average of 60.5% longer time than eight systems secondaries. Construction time was significantly reduced for systems schools and there is promise of greater reduction.

In September, 1968, the School Building Research Advisory Committee began work. The program adopted for the current fiscal year has three parts:

1. Evaluation of past programs;

2. Identification of "User Requirements" for

all levels of education in Florida, kindergarten through university;

3. Assist local school districts, architects and engineers in the use of systems.

Future programs may include both research and development for new building systems and volume bidding to reduce cost of existing school building systems. The primary purpose of the Schoolhouse Systems Project is to carry on research into the needs of education and the development of new products to solve the problems which are identified. There is a significant cost reduction potential in volume bidding of school building subsystems for state wide purchasing, in a manner similar to that used for purchasing school buses.

The remainder of this report is to elaborate on and support the statements made in this brief introductory summary.

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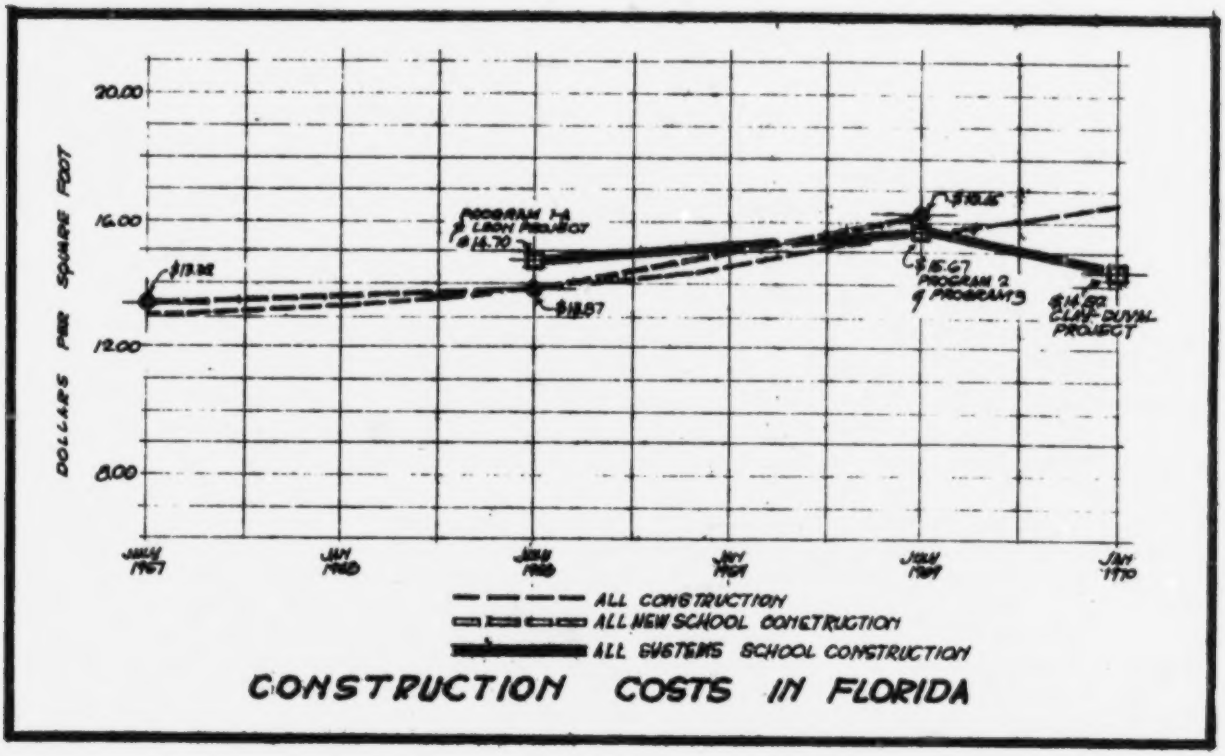
## COST DATA

In late 1966 and early 1967 the biggest question was whether a systems school could be purchased for the construction budgets prevailing in Florida. These budgets were $4.00 and $6.00 per square foot less than the budgets of the California school districts which were in a previous systems program, School Construction Systems Development (SCSD). Bidding in Program 1-A proved it could be done. Final construction costs averaged very close to the amounts budgeted for the projects and very nearly the same as non-systems schools. See Graph I. The purpose of grouping the six buildings of Program 1-A for systems bidding was to increase interest in the program and develop bidder competition, thereby reducing cost.

GRAPH I




CONSTRUCTION COSTS IN FLORIDA

It is possible to build schools at a cost lower than those which are using the school building systems but it appears to be most difficult, if not impossible, to build schools which meet the same educational requirements, which have as good an environment and which use as high quality materials for as low a cost.

One of the significant educational requirements is to provide for future unknown changes. This requires space that can be changed conveniently and economically. The requirement for change is based on the premise that change in the world is rapid and accelerating, and education must be able to respond in order to satisfy future needs. Buildings without pre-coordinated building subsystems fail to provide as high a degree of adaptability as is found in systems buildings. In order to develop the same degree of adaptability in non-systems buildings, architects and engineers would have to produce more work than they could afford within the traditional fee schedule. The cost of the facility would also be prohibitive.

In Program 1-A four subsystems were pre-bid: structure, lighting/ceiling, heating/ventilating/air conditioning (HVAC) and interior partitions. The interior partition prices were evaluated and rejected. The structural subsystem /1/ averaged $1.617 per square foot, the HVAC /2/ at $2.108 and lighting/ceiling /3/ at $1.413. The three basic subsystems made up 33 to 37 percent of the construction costs for the six schools in the project. General contract costs ranged from $12.23 to $17.08 and per pupil costs ranged from $900 to $1560.

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/1/ The structural subsystem was steel and included anchor bolts, leveling plates, column base plates, 8" square tube columns, open web girders, open web purlins and deformed metal deck. The cost for this structural subsystem included erection or labor costs.

/2/ The HVAC subsystem was roof mounted multizone equipment, nominally 22 tons per unit, with up to 12 zones per unit, hot and cold deck, flexible terminal duct and relocatable supply air diffusers. Return air was through the lighting/ceiling system.

/3/ The lighting/ceiling subsystem was suspended slightly below the structure with a grid system capable of sustaining partition loads at random locations. The ceiling was a combination of coffers and flats. The light source was located in the apex of the coffers. The HVAC system "helps" the lighting/ceiling system by bringing the return air over the lamp and ballast, increasing the life of each and increasing the output by a factor of 1.17. The lighting/ceiling system "helps" the HVAC system by having integral air distribution boots and slots and return air slots. The distribution boots are relocatable.

Program 2 schools were bid in August 1968. Nine separate projects with nearly 500,000 square feet of space made up the program. Three schools were new and six were additions. To the original three subsystems were added cabinets, carpeting, and interior partitions (demountable), operable panel and operable accordian. The structural bid averaged $1.280 per square foot; the HVAC $2.106 and the lighting/ceiling $0.931.

TABLE II

SUBSYSTEMS COSTS

| PROGRAM | SCHOOLS | BID DATE | SQ.FT. GROSS AREA | STRUCTURE | COSTS C/L | HVAC | TOTAL | ACTUAL* CHANGE | PLUS** ESCULATION |
|---|---|---|---|---|---|---|---|---|---|
| 1-A | 6 | Oct.'67 | 280,800 | $ 1.617 | $ 1.413 | 2.108 | 5.138 | | |
| 2 | 9 | Aug.'68 | 485,000 | 1.280 | .931 | 2.106 | 4.317 | -16% | -21% |
| 3 | 8 | Dec.'68 | 541,000 | 1.164 | 1.145 | 2.255 | 4.564 | -11% | -18% |
| Clay-Duval | 3 | June'69 | 475,000 | 1.26 | 0.97 | 2.35 | 4.580 | -10.7% | -20.7% |
| Martin | 1 | Aug.'69 | 79,221 | 1.275 | 1.191 | 2.679 | 5.145 | +1 | -10% |
| Alachua-Hernando | 2 | Oct.'69 | 61,200 | 1.206 | 1.111 | 3.441 | 5.758 | +12.4% | +.04% |

*All changes are from the total ($5.138) of Program 1-A

**Inflation figure of ½% per month added for each month elapsed after bid for Program 1-A (October, 1967).

Comparing the basic three subsystems bids in both Program 1-A and Program 2, the average per square foot cost went down from $5.138 to $4.317, or a reduction of 16%. Program 2 was bid ten months later than Program 1-A and even a modest construction cost rise of 1/2% per month /4/ makes the inflation figure 5% and the difference in price 21%.

In December, 1968, less than four months after Program 2, a third program was bid which included eight schools in only three districts. The volume of work remained at approximately one-half million square feet. All six subsystems categories that were bid in Program 2 were repeated in Program 3. The six systems make up 40 to 45 percent of the total construction costs.

The structural cost again was lower than the previous bid and averaged $1.164 per square foot, HVAC was $2.255 per square foot and lighting/ceiling was $1.145 per square foot. The average of $4.546 was about 5% higher than Program 2, which was bid four months earlier, but still about 18% lower than Program 1-A, bid fourteen months earlier, when the 1/2% per month inflation factor is added.

## LOCAL PROGRAMS

During the spring of 1969 the Commissioner's Advisory Committee on School Building Research recommended that state bidding programs conducted by the SSP staff stop to allow time for evaluation of past programs, but that the Department of Education staff help anyone requesting aid to run a program with bids received locally.

In June, 1969, the first locally received bids, for systems in Florida, were opened in Jacksonville. Two schools in Duval County were joined with one in Clay County. Nearly one-half million square feet was again offered but this time in two school districts and including only three schools.

One of the schools in the Clay-Duval Program was the Orange Park High School Addition. The original construction for Orange Park High School was in Program 1-A. This is the only two-story school of the thirty systems projects in the State. The architectural and engineering

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/4/ The inflation figure in Florida during the period was from 1/2% to 1-1/2% per month, depending on the particular construction area.

firm for Orange Park High School, listed in Appendix B, is one of three firms which have done two systems projects.

The average price of structure, HVAC and lighting/ceiling was $4.580, as compared to the $4.564 for Program 3 which was bid six months earlier. Applying the inflation increase of 1/2% per month, the net change was nearly 3% downward. Or, to look at it in another way, the systems costs were holding the line against inflation. A major difference between Program 3 and the Clay-Duval Program was the distribution of the work. Program 3 has eight schools -- six in Leon County, one in Seminole County and one in Palm Beach County. In Clay-Duval, the three school locations fall within a circle, 10 miles in diameter, laid over the Jacksonville area.

When the systems prices are compared for the basic three systems, for Program 1-A ($5.138) and the Clay-Duval Project ($4.580), we find that the average cost is 10% lower in the larger program. When the 1/2% per month inflation factor is applied for the twenty months between the two bids, the net savings is 20% in the systems cost.

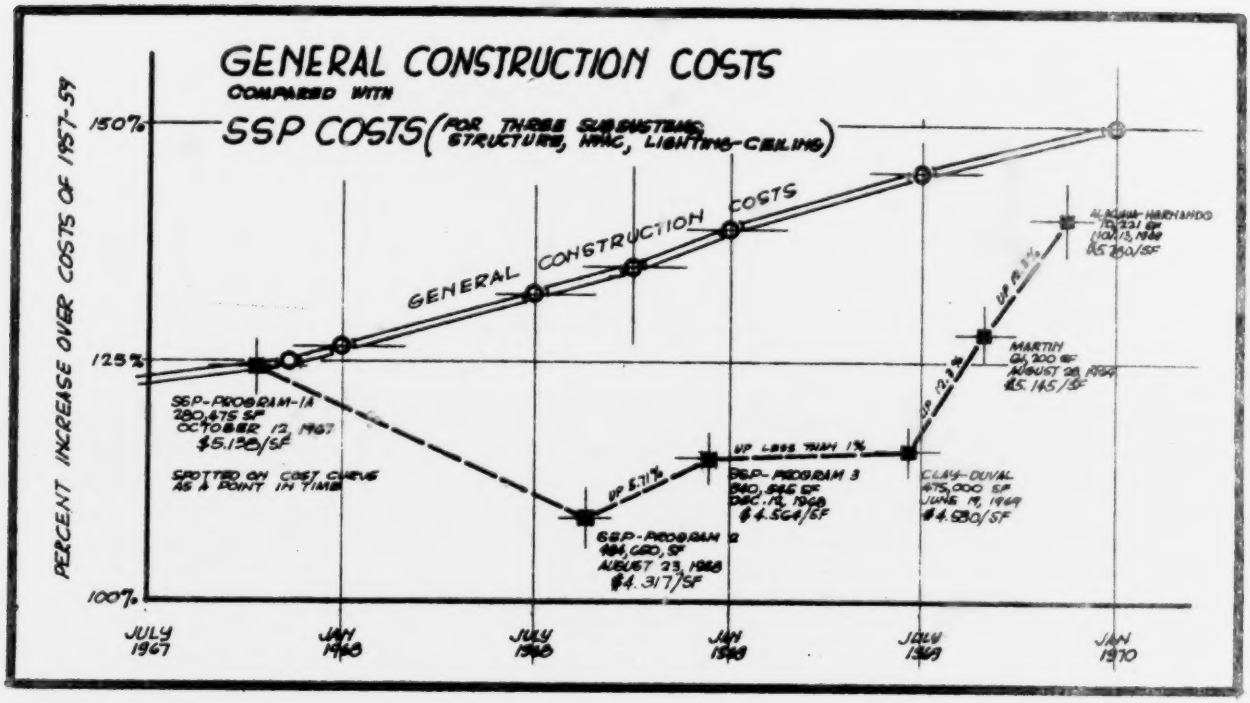
Two small programs have been bid since June, 1969 and in both cases the cost of systems went up significantly. Both programs were well under 100,000 square feet in size. We can only conclude that the cost is related to the volume offered the bidders. Graph II on the following page displays this information effectively.

## ECONOMY

Evidence is offered in the preceding section that when one-half million square feet are purchased in one bid, the cost of the prebid subsystems may be reduced as much as 20%. But what is the total construction cost of the buildings which used the subsystems, and how do the costs compare to conventional construction of the same period? In Appendix C you can review construction cost figures for the last two fiscal years.

Graph I illustrates this information. Systems schools were constructed for 3% less than non-systems schools of the same period. This sample includes fifty-two schools. Eleven of the fifty-two schools were in SSP 2 and 3, where prebid systems were purchased for a substantial savings. Why were systems purchased at a significantly reduced cost and finished buildings purchased at nearly the same cost? Several reasons are evident. Budgets were established for the schools without

GRAPH II




regard to whether systems were included or not. The architect's responsibility was to provide the educational requirements, as completely as possible, within the budget. After the subsystems prices were established, each architect knew how much money remained to complete the buildings and his charge still remained to satisfy all needs within the budget. Seldom are moneys sufficient to satisfy all needs and seldom, at least in recent years, have bids been significantly lower than the budget.

It appears that the client and the architects may have an element of control over costs when using the systems process which they lose on the nonsystems part of the project.

Table III contains a comparison of cost data for Program 3. The square foot cost of systems is reasonably consistent for all schools. The square foot cost of the finished construction is consistent for all except the single school in Palm Beach County. The percentage of systems to total cost varies because the amount of systems used was relatively small as in the case of Spring Lake Elementary in Seminole County, or the general contractor costs were particularly high as was the case with Kirklane Elementary in Palm Beach County. The bid date was postponed twice in Palm Beach County and then only two general contractors bid.

TABLE III

PROGRAM 3

TOTAL COST / SYSTEMS COST / GENERAL COST

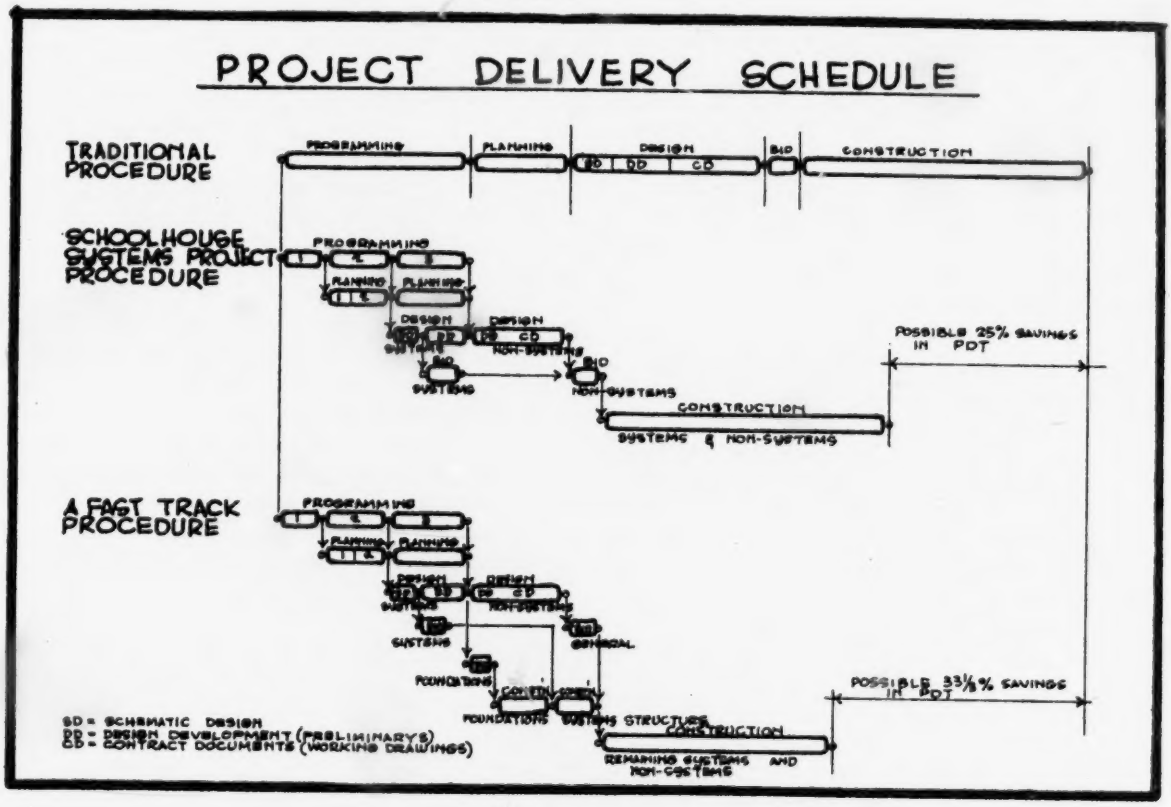
| SCHOOL DISTRICT NAME | SCHOOL NAME | CONSTRUCT'N COST (100%) | SYSTEMS COST | % OF TOTAL | GENERAL CONTRACT COST | % OF TOTAL | SQUARE FOOT COST |
|---|---|---|---|---|---|---|---|
| LEON COUNTY | School "A" (Astoria Park Elementary) | $ 714,170. | $ 301,132. | 42% | $ 413,038. | 58% | $13.94 |
| | School "B" | PROJECT DELAYED INDEFINITELY | | | | | |
| | School "C" (Oak Ridge Elementary) | $ 744,040. | $ 304,467. | 41% | $ 439,573. | 59% | $14.84 |
| | School "D" (Apalachee Elementary) | $ 631,486. | $ 281,279. | 45% | $ 350,207. | 55% | $13.72 |
| | School "F" (Belle Vue Junior High) | $1,228,395. | $ 552,879. | 45% | $ 675,516. | 55% | $13.50 |
| | School "G" (Fairview Middle) Rebid | $1,304,261. | $ 560,000. | 43% | $ 744,261. | 57% | $14.67 |
| | New Sealey Elementary Rebid | $ 719,372. | $ 276,657. | 38% | $ 442,715. | 62% | $14.94 |
| PALM BEACH COUNTY | School "L" (Kirklane Elementary) | $ 870,945. | $ 310,000. | 36% | $ 560,945. | 64% | $16.83 |
| SEMINOLE COUNTY | Spring Lake Elementary | $ 698,595. | $ 240,726. | 34% | $ 457,869. | 66% | $14.74 |
| AVERAGE | | $ 863,908. | $ 353,392. | 41% | $ 510,516. | 59% | $14.65 |

## CONSTRUCTION TIME

Data were gathered for both the time required for construction and the time required to deliver a project to the owner. Project delivery time started when the architect began planning and ran until the facilities were ready for use. There is increasing concern over the time required to get a building under construction and completed because of the acceleration of the inflation curve in recent years. Rapidly rising costs reduce the buying power of the construction dollar. Delays in time cost money.

Hasty decisions can also be costly so speed was sought without sacrificing good planning. The prebidding process used in the systems programs lends itself to changing the sequence of steps which must take place in the planning and construction process from the normal sequence. Normally, the decisions are made in a linear fashion, with one decision following another, but in the systems process, the time may be reduced by overlapping of the steps in the manner shown in the following schedule.

SCHEDULE



Most of the SSP schools were planned and constructed as shown in the middle sequence with good results. The Fast Track Project Delivery Process is presently theory as far as Florida's school construction is concerned, but two architects are currently committed to testing the theory. The Fast Track Process is not unusual for building construction in the private sector.

The tabulation included at the end of this section lists schools funded during the 1968-69 fiscal year. Time schedules are included for all schools. The sample is sufficiently large enough to provide averages which are valid. The following average data were obtained:

- 26 conventionally designed elementary schools constructed in an average of 303 days.
- 14 systems-designed elementary schools constructed in an average of 266 days.

- Conventionally designed elementary schools averaged 37 days longer, or
- Conventionally designed elementary schools averaged 14% longer.

- 8 conventionally designed secondary schools constructed in an average of 451 days.
- 8 systems-designed secondary schools constructed in an average of 281 days.

- Conventionally designed secondary schools constructed in an average of 170 days longer, or
- Conventionally designed secondary schools averaged 60.5% longer.

The reduction of construction time for systems schools was significant. This occurred in spite of the delays caused by dissatisfaction with the contracting process and the newness of the experience to many people involved. Systems schools were delayed by failure of subsystems suppliers to deliver on time as well as the delivery and installation of the prebid subsystems being slowed due to the lack of labor at most of the systems schools. This prompts the statement that there may be more promise than actual results.

The results of a study on project delivery time are conflicting. The following average data were obtained:

- 26 conventionally designed elementary schools delivered in an average of 478 days.
- 14 systems-designed elementary schools delivered in an average of 550 days.

- Conventionally designed elementary schools averaged 72 days less.
- Conventionally designed elementary schools averaged 15% less.

- 8 conventionally designed secondary schools delivered in an average of 774 days.
- 8 systems-designed secondary schools delivered in an average of 535 days.

- Conventionally designed secondary schools delivered in an average of 239 days longer.
- Conventionally designed secondary schools delivered in an average of 44.6% days longer.

The average project delivery time was significantly shorter for systems designed secondary schools (44.6%) and significantly longer for systems designed elementary schools (15%). Why do we get these conflicting results? One significant reason was the unduly long time expended on the five systems additions in Sarasota County. These projects were constructed in an average of 268 days as compared to an average of 262 days for all systems elementaries. However, the total time for project delivery averaged 630 days as compared to an average of 550 days for all systems elementary schools.

The problems in Sarasota which prolonged the projects seemed to be related to the change in the decision-making process from that which architects and engineers normally follow. No attempt will be made here to analyze all the correspondence files related to these projects for this would be a research project alone. The architects and engineers were obviously unhappy with the problems, and systems suppliers were greatly nettled by the long delays and changes but all held price commitments long beyond the required period.

Apparently, everyone connected with the Sarasota projects is reasonably happy with the resulting systems buildings as far as

environment, functional space, and cost are concerned. They were most displeased with the delivery time.

On the other hand, some of the non-systems schools required a tremendously long lead time before bids were taken, which may have been no fault of the architect and his team but due to failure to get decisions from the client. Some school districts used the building systems because they were interested in getting the buildings as soon as possible and these clients may have furnished information to the architects faster.

It is interesting to note which schools were built and/or delivered in the shortest time. This would indicate the potential. The schools with the shortest time follow:

## Construction Time

### Conventionally Designed

Rawlings Elementary - Alachua County - 235 days

Glen Springs Elementary - Alachua County - 242 days

Vanguard High School - Marion County - 306 days

Lyman High School - Seminole County - 354 days

### Systems Designed

Oak Ridge Elementary - Leon County - 202 days

Astoria Park Elementary - Leon County - 202 days

Spring Lake Elementary - Seminole County - 204 days

Phillipi Shores Elementary Additions - Sarasota County - 205 days

Bradford Middle School - Bradford County - 168 days

East Naples Middle School - Collier County - 214 days

Fort Walton Beach High School - Okaloosa County - 287 days

Construction time was very good for the three Alachua Elementary Schools listed in the Tabulation. The construction contracts were written on the basis of a short construction period with significant liquidated damages.

The shortest times to plan and build follow:

Project Delivery Time

Conventionally Designed Elementary Schools:

Eisenhower - Broward County - 351 days

Cypress - Broward County - 376 days

Systems Designed Elementary Schools:

Oak Ridge - Leon County - 366 days

Astoria Park - Leon County - 366 days

Conventionally Designed Secondary Schools:

Apollo - Broward County - 566 days

Systems Designed Secondary Schools:

East Naples - Collier County - 288 days

Belle Vue - Leon County - 444 days

In summary, construction time was reduced significantly for schools using precoordinated building components. The results for total elapsed project delivery time are conflicting. There is much promise for reducing both significantly as is evidenced by the schools where the best results were obtained but the questions of contractual responsibility must be settled and delivery and installation controlled. Prefabrication and fast tracking are with us and offer something we need.

TABULATION

CONSTRUCTION TIME AND PROJECT DELIVERY TIME
FOR
NONSYSTEMS ELEMENTARY SCHOOLS

| SCHOOL NAME | SCHOOL DISTRICT NAME | SQUARE FOOT AREA | ITEMS UNDER SEPARATE CONTRACT | SEPARATE CONTRACTS ADMINISTERED BY | DATE EDUC. PROGRAM GIVEN TO ARCHITECT | DATE BIDS RECEIVED FROM GEN. CONTR'S | DATE BUILDING SUBSTANTIALLY COMPLETED | CONSTRUCTION TIME | PROJECT DELIVERY TIME | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| Glen Springs | Alachua | 48,594 | Site Work, Carpeting, Equipment | BPI and Architect | 6/14/68 | 1/10/69 | 9/8/69 | 242 | 466 | Basis of contract award lowest base bid and shortest constr'n time $250 per day value set for constr'n time evaluation. |
| Rawlings | Alachua | 48,594 | Site Work, Carpeting, Equipment | BPI and Architect | 6/14/68 | 1/10/69 | 9/2/69 | 235 | 445 | |
| Prairie View | Alachua | 48,594 | Site Work, Carpeting, Equipment | BPI and Architect | 6/14/68 | 1/10/69 | 9/29/69 | 262 | 472 | |
| Arcola Lake | Dade | 55,639 | None | None | 5/1/68 | 10/19/68 | 9/19/69 | 327 | 514 | |
| Bel-Aire | Dade | 41,370 | None | None | 4/8/68 | 5/20/69 | 3/24/70 | 307 | 715 | |
| Greenglade | Dade | 36,911 | None | None | 4/1/68 | 11/21/68 | 9/8/69 | 291 | 526 | |
| Miami Gardens | Dade | 41,370 | None | None | 4/8/68 | 12/3/68 | 1/16/70 | 409 | 658 | |
| Miami Lakes | Dade | 36,911 | None | None | 4/1/68 | 11/26/68 | 9/9/69 | 287 | 527 | |
| Norwood | Dade | 36,911 | None | None | 4/1/68 | 11/19/68 | 9/10/69 | 295 | 528 | |
| Olinda | Dade | 55,639 | None | None | 5/1/68 | 10/19/68 | 1/26/70 | 454 | 636 | |
| Primary "A" | Dade | 20,000 | None | None | 6/12/68 | 3/11/69 | 1/27/70 | 322 | 594 | |
| Lake Placid | Highlands | 37,465 | Site Work | BPI | 5/14/68 | 11/19/68 | 9/2/69 | 287 | 476 | |
| Pinellas Central | Pinellas | 78,600 | Carpet Furniture | BPI - Staff | 8/5/68 | 5/2/69 | 6/1/70 | 395 | 665 | |
| Florosa | Okaloosa | 44,500 | None | None | 9/1/68 | 3/17/69 | 11/26/69 | 254 | 454 | |
| Coconut Creek | Broward | 45,808 | Carpet | BPI - Staff | 11/1/68 | 1/23/69 | 12/17/69 | 325 | 412 | Construction worker strike of 37 days, beginning April 1, 1969 in Broward County. Labor in short supply during total construction period. |
| Cypress | Broward | 45,808 | Carpet | BPI - Staff | 11/1/68 | 1/23/69 | 11/14/69 | 282 | 376 | |
| Eisenhower | Broward | 45,998 | Carpet | BPI-Staff | 11/1/68 | 1/30/69 | 10/17/69 | 260 | 351 | |
| Fairway | Broward | 47,046 | None | BPI-Staff | 3/1/68 | 9/4/68 | 7/7/69 | 306 | 496 | |
| Castle Hill | Broward | 45,808 | Carpet | BPI-Staff | 11/1/68 | 2/6/69 | 12/15/69 | 312 | 410 | |
| Hollywood Cen. | Broward | 40,743 | Carpet | BPI-Staff | 10/1/68 | 2/26/69 | 1/21/70 | 330 | 478 | |
| Hollywood Park | Broward | 45,808 | Carpet | BPI-Staff | 11/1/68 | 2/6/69 | 12/2/69 | 308 | 397 | |
| Palmview | Broward | 45,808 | Carpet | BPI-Staff | 10/1/68 | 1/15/69 | 12/19/69 | 338 | 445 | |
| Annabel C. Perry | Broward | 45,808 | Carpet | BPI-Staff | 11/1/68 | 1/30/69 | 2/12/70 | 379 | 469 | |
| Mirror Lake | Broward | 45,808 | Carpet | BPI-Staff | 11/1/68 | 1/15/69 | 2/10/70 | 377 | 467 | |
| Sabal Palm | Broward | 47,046 | None | None | 3/1/68 | 8/22/68 | 6/6/69 | 289 | 464 | |
| Village | Broward | 47,046 | None | None | 3/1/68 | 8/21/68 | 5/5/69 | 260 | 432 | |
| | | | | | | | TOTALS | 7,877 | 12,419 | |
| | | | | | | | | | | |
| | | | | | | | AVERAGE NUMBER OF DAYS FOR NONSYSTEMS ELEMENTARY SCHOOLS | 303 | 478 | |

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TABULATION

CONSTRUCTION TIME AND PROJECT DELIVERY TIME
FOR
NONSYSTEMS SECONDARY SCHOOLS

| SCHOOL NAME | SCHOOL DISTRICT NAME | SQUARE FOOT AREA | ITEMS UNDER SEPARATE CONTRACT | SEPARATE CONTRACTS ADMINISTERED BY | DATE EDUC. PROGRAM GIVEN TO ARCHITECT | DATE BIDS RECEIVED FROM GEN. CONT'S | DATE BUILDING SUBSTANTIALLY COMPLETED | CONSTRUCTION TIME | PROJECT DELIVERY TIME | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|
| Boca Raton Junior High School | Palm Beach | 153,121 | Site Fill | BPI | 12/27/67 | 7/23/68 | 8/25/69 | 395 | 619 | Reuse of Plans |
| Apollo Middle School | Broward | 127,950 | Carpet | BPI-Staff | 9/1/68 | 12/20/68 | 3/20/70 | 455 | 566 | Strike of 37 days in Broward County beginning April 1, 1969. Labor in short supply during this period. |
| Deerfield Beach High School | Broward | 238,274 | Carpet | BPI-Staff | 3/1/68 | 11/14/68 | 75% Complete | ----- | ----- | |
| Miramar | Broward | 238,274 | Carpet | BPI-Staff | 9/1/68 | 11/20/68 | 80% Complete | ----- | ----- | |
| Lauderdale Lakes Middle | Broward | 127,950 | Carpet | BPI-Staff | 9/1/68 | 12/20/68 | 80% Complete | ----- | ----- | |
| Lauderdale Middle | Broward | 127,950 | Carpet | BPI-Staff | 9/1/68 | 12/18/68 | 85% Complete | ----- | ----- | |
| Plantation Middle | Broward | 127,950 | Carpet | BPI-Staff | 3/1/68 | 12/18/68 | 3/18/70 | 455 | 748 | |
| Richards Middle | Broward | 127,950 | Carpet | BPI-Staff | 9/1/68 | 2/13/69 | 70% Complete | ----- | ----- | |
| Highlands Jr. High School | Duval | 120,448 | Site & Sewer | Engineer | 10/20/66 | 12/21/67 | 3/21/69 | 456 | 842 | |
| Cocoa Beach High School | Brevard | 134,033 | None | None | 5/14/68 | 5/20/70 | Incomplete | ----- | ----- | |
| Hialeah-Miami Lakes Sr. High | Dade | 251,000 | None | None | 9/1/66 | 5/6/69 | Tentative 3/1/71 | ----- | ----- | Plans held for one year for financing. |
| Lyman High School | Seminole | 173,900 | Site Carpet | Architect | 3/30/67 | 9/12/68 | 9/1/69 | 354 | 884 | |
| Vanguard Sr. High School | Marion | 120,000 | None | None | 7/1/68 | 3/21/69 | 2/21/70 | 306 | 570 | |
| Port St. Joe High School | Gulf | 153,000 | None | None | 5/15/67 | 6/7/68 | 7/15/70 | 768 | 1156 | |
| Wewahitchka High School | Gulf | 54,000 | None | None | 5/15/67 | 6/7/68 | 8/1/69 | 419 | 807 | |
| | | | | | | | TOTALS | 3,608 | 6,192 | |
| | | | | | | | | | | |
| | | | | | | | AVERAGE NUMBER OF DAYS FOR NONSYSTEMS SECONDARY SCHOOLS | 451 | 774 | |

TABULATION

CONSTRUCTION TIME AND PROJECT DELIVERY TIME
FOR
SYSTEMS ELEMENTARIES SCHOOLS

| SCHOOL NAME | SCHOOL DISTRICT NAME | SQUARE FOOT AREA | ARCHITECT ADMINISTERED SYSTEMS CONTRACTS | SYSTEMS ASSIGNED TO GENERAL CONT'R FOR ADMIN. | SYSTEMS CONTRACT ASSIGNED TO GENERAL CONT'R AS A SUB CONTRACTOR | DATE EDUC. PROGRAM GIVEN TO ARCHITECT | DATE SYSTEMS BIDS RECEIVED | DATE BIDS RECEIVED FROM GEN. CONTR'S | DATE BUILDING SUBSTANTIALLY COMPLETED | CONSTRUCTION TIME | PROJECT DELIVERY TIME | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alta Vista Addition | Sarasota | 20,000 | | X | | 5/2/68 | 8/23/68 | 5/20/69 | 4/1/70 | 326 | 709 | Delay caused by delivery of structures and carpet. |
| Brentwood Addition | Sarasota | 20,000 | | X | | 5/15/68 | 8/23/68 | 5/27/69 | 4/1/70 | 319 | 696 | |
| Phillippi Shores Addition | Sarasota | 21,477 | | X | | 5/1/68 | 8/23/68 | 5/2/69 | 11/24/69 | 205 | 573 | Total Const'n Time Sarasota Addns. 1,342 Average 268 — Total Time Sarasota Addns. 3,148 Average 630 |
| Wilkinson Addition | Sarasota | 20,000 | | X | | 7/20/68 | 8/23/68 | 7/1/69 | 3/16/70 | 260 | 605 | |
| Fruitville Addition | Sarasota | 25,775 | | X | | 6/18/68 | 8/23/68 | 5/19/69 | 1/29/70 | 255 | 590 | |
| Jensen Beach | Martin | 20,000 | | | X | -- | -- | 11/15/69 | Under Construction | | | |
| Brooksville | Hernando | 44,000 | | | | -- | 10/14,69 | 3/3/70 | Under Construction | | | Completion Date September, 1970. |
| High Springs | Alachua | 22,000 | | X | X | 6/1/69 | 10/14/69 | 2/3/70 | Under Construction | | | Bid 5 subsystems and accepted only two, structure & roof insulation. |
| Ellenton-Parrish | Manatee | 35,000 | | X | | 3/20/68 | 8/23/68 | 4/15/69 | 3/20/70 | 340 | 730 | Preliminary plans were approved June 1, 1968 and a decision to use systems delayed at least 60 days to replan |
| Moore Haven | Glades | 52,242 | | X | | 5/15/67 | 10/12/67 | 5/15/68 | 2/11/69 | 272 | 637 | BPI offered a substantial extension of time for completion to Gen. Contractor. |
| Pinewood | Brevard | 28,861 | | | X | 6/30/67 | 10/12/67 | 3/12/68 | 12/26/68 | 289 | 544 | Significant delay caused by failure of demountable partition panel supplier to deliver. |
| W. T. Moore | Leon | 67,909 | X | | | 9/1/67 | 1/15/68 | 3/12/68 | 10/15/68 | 217 | 410 | Occupied 9/1/68. |
| Astoria Park | Leon | 55,000 | | X | | 10/1/68 | 12/12/68 | 3/13/69 | 10/1/69 | 202 | 366 | Occupied incomplete September 2, 1969. |
| Apalachee | Leon | 48,105 | | X | | 10/18/68 | 12/12/68 | 3/13/69 | 2/1/70 | 258 | 471 | Construction began after May 19, 1969. Site was unavailable. |
| Oak Ridge | Leon | 50,000 | | X | | 10/1/68 | 12/12/68 | 3/13/69 | 10/1/69 | 202 | 366 | Occupied incomplete September 2, 1969. Architect really administered systems contract. |

CONTINUED ON NEXT PAGE

TABULATION

PROCESS FOR CONTRACTING AND TIME SCHEDULES
FOR
SYSTEMS ELEMENTARY AND SECONDARY SCHOOLS

| SCHOOL NAME | SCHOOL DISTRICT NAME | SQUARE FOOT AREA | ARCHITECT ADMINISTERED SYSTEMS CONTRACTS | SYSTEMS ASSIGNED TO GENERAL CONT'R FOR ADMIN. | SYSTEMS CONTRACT ASSIGNED TO GENERAL CONT'R AS A SUB CONT'R | DATE EDUC. PROGRAM GIVEN TO ARCHITECT | DATE SYSTEMS BIDS RECEIVED | DATE BIDS RECEIVED FROM GEN. CONT'S | DATE BUILDING SUBSTANTIALLY COMPLETED | CONSTRUCTION TIME | PROJECT DELIVERY TIME | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONTINUED: | | | | SYSTEMS ELEMENTARY SCHOOLS | | | | | | | | |
| Elementary "B" Sealey School | Leon | 50,000 | | X | | 10/1/68 | 12/12/68 | 5/15/69 | 4/30/70 | 350 | 577 | Tentative completion date is safe. |
| Spring Lake | Seminole | 47,240 | X | | | 6/28/68 | 12/12/68 | 2/5/69 | 8/28/69 | 204 | 426 | |
| Kirklane I | Palm Beach | 44,000 | | X | | 10/10/67 | 8/23/68 | 3/4/69 | Incomplete ------ | | | Considerable delay was caused by failure to make sites available. |
| Eisenhower I | Palm Beach | 44,000 | | X | | 10/10/67 | 12/12/68 | 3/4/69 | Incomplete ------ | | | Assignment did not work well and BPI & architect had extra work. |
| | | | | | | | | | TOTALS | 3,727 | 7,700 | |
| | | | | SYSTEMS SECONDARY SCHOOLS | | | | | | | | |
| Belle Vue Middle School | Leon | 85,000 | | X | | 10/1/68 | 12/12/68 | 2/12/69 | 12/18/69 | 300 | 444 | Building occupied 9/21/69. Complete except partitions & carpet - 12/11/69 |
| Fairview Middle School | Leon | 89,000 | | X | | 10/1/68 | 12/12/68 | 6/5/69 | 4/30/70 | 329 | 577 | Tentative completion date is safe |
| Orange Park High School | Clay | 31,350 | | | X | 8/1/67 | 10/12/67 | 6/18/68 | 4/5/69 | 291 | 613 | 2-story building. |
| West Nassau High School | Nassau | 33,424 | | | X | 12/15/66 | 10/12/67 | 2/7/68 | 9/7/68 | 210 | 631 | |
| Bradford Middle School | Bradford | 36,643 | | X | | 5/15/67 | 10/12/67 | 3/3/68 | 8/18/68 | 168 | 459 | |
| East Naples Middle School | Collier | 77,225 | | | X | 1/1/68 | 10/12/67 | 3/15/68 | 10/15/68 | 214 | 283 | Final program recv'd on 1/1/68 causing much adjustment after systems bids received. |
| Ft. Walton Beach H.S. | Okaloosa | 168,000 | | X | | 7/1/68 | 8/23/68 | 1/20/69 | 11/3/69 | 287 | 491 | |
| Edwards Road H.S. Addition | St.Lucie | 140,000 | X | | | 3/15/68 | 8/23/68 | 2/11/69 | 5/1/70 | 446 | 777 | Strike stopped job for several weeks. Tentative completion date safe. |
| Orange Park H.S.Addition | Clay | 60,000 | | X | X | | 6/15/69 | 10/9/69 | Under Construction | | | Contracts btwn. BPI-systems subs for mtrls (exempting sales tax) & assigned to gen. cont'r for admin. Labor for systems assigned for contracting. |
| Edward H. White Sr. H.S. | Duval | 180,000 | | X | X | 12/11/68 | 6/15/69 | 1/7/70 | Under Construction | | | |
| Sandlewood Sr. High School | Duval | 250,000 | | X | X | | 6/15/69 | | Not Under Const'n-Under Contract | | | |
| Indiantown Middle School | Martin | 40,000 | | | X | | | 11/15/69 | Under Construction | | | |
| | | | | | | | | | TOTAL | 2,245 | 4,280 | |

| | | |
|---|---|---|
| AVERAGE NUMBER OF DAYS FOR SYSTEMS ELEMENTARY SCHOOLS | 266 | 520 |
| AVERAGE NUMBER DAYS FOR SYSTEMS SECONDARY SCHOOLS | 281 | 535 |

## PROBLEMS

The most persistent problem has been working out a procedure for handling the prebid /5/ subsystems contracts and the relationship between the general contractor and his systems subs. A number of different approaches have been used with progressive improvement.

A satisfactory solution for a program with a single building is to incorporate the performance specifications into the architect's traditional specifications prescription /6/. The general contractor can submit all prices and can choose his subcontractors. This approach may reduce the sharpness of bidding competition among subsystem contractors.

On a large volume prebid subsystems project, when the buildings are needed as soon as possible, or in cases where the school board wishes to exempt from sales tax /7/ the materials part of the subsystem cost, the prebid and preselected subsystems contractors can still be assigned to the general contractors for contracting. In the Clay-Duval Program, for all three schools, separate contracts were entered into between the school boards and the subsystems contractors for materials only, thereby exempting from sales tax. The systems subs were then assigned to the general contractor for contracting. This made the systems suppliers subcontractors to the general contractors and still enabled the board of education to exempt from sales tax, which is a reduction of at least 1% of the total construction cost. On the Orange Park High School addition, in the Clay-Duval

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/5/ Prebid in the SSP programs refers to the receipt of bona fide component subsystems bids prior to receiving general contractor bids. Often component subsystems bids are received prior to the start of working drawings.

/6/ Architect's traditional specifications prescribe the products to be used, rather than how they perform.

/7/ The Florida tax laws and regulations permit exemption for construction under certain conditions which were met in some of the SSP programs. Exempting from sales tax is not an objective or necessary part of the program and meeting the conditions has caused some problems.

Program, exemption from sales tax amounted to 1.5% of the total construction contract.

Many complaints were heard about the problems of multiple contracts and the advice of the Commissioner's Advisory Committee, SSP staff and those who were involved in previous programs is to avoid separate contracts. Separate contracts are not necessary in order to use the systems process. Leon County entered into separate contracts for the six schools in SSP No. 3 for two reasons:

(1) to exempt from sales tax, and
(2) to reduce delivery time.

Leon County exempted $71,958 of sales tax. Part of this savings might have been used to coordinate the work and handle the problems which did arise but responsibility fell on the architects or administrators who were already overworked. The savings can become less important than the problems. The suggestion is to avoid multiple contracts, but if they are used, to understand the problems involved.

General contractors have complained about handling work on which they accepted subcontractors whom they didn't select, resulting in some loss of the normal control. It is true that the change in the bidding and contracting process tends to confuse normal relationships and normal procedures. Some general contractors prosecuted their responsibility very well. Some blamed all problems for delay on the loss of control, even in cases where component subcontractors were assigned to the general contractor for contracting.

Obviously general contractors need leverage over all subcontractors in order to prosecute their responsibility successfully. One form of leverage is financial. The SSP Performance Specifications contain liquidated damages of $100 per day, prorated on $250,000 of construction costs for each day of delay beyond a reasonable pre-established completion date. Several things occurred to abort the value of the financial control in most of the projects. Liquidated damages were assessed and collected in some projects but the most injurious procedure for rendering the leverage ineffective is the failure of most boards of education to collect when delays occur. This is caused by several popularly held beliefs. One is that the board can't collect liquidated damages, which is true if the specifications are improperly prepared. Two is that the client must prove a loss. This has been tested in court with the result that if a contractor accepts a reasonable completion date and fails, he is liable without the injured party proving financial loss. Three is that provision for liquidated damages requires provision for a reward if the contractor delivers early. This is true in the case of a penalty clause, but not liquidated damages. Four is that

contractors will bid higher. It is true that some contractors may not even bid because they are unsure of their ability to deliver but no evidence exists that those who do bid raise their prices and sufficient evidence exists that they don't when the pre-established construction time is reasonable.

Lack of effective communication caused failure to effectively control production. The liquidated damages clause was removed from the contracts for one county for all component subcontractors by someone connected with the local projects, even though the component bidders had all agreed to assuming liquidated damages when they presented their bids. This left the architects and general contractors without leverage.

Apparently we are failing to control the delivery schedule of contractors on most of the schools which we build because we witness the same kinds of unreasonable delays with many projects. Industrialization has allowed us to reduce construction time significantly on projects using prebid components as is shown in the preceding section of this report, but not as much as we should if we controlled production. This is an area requiring further study.

Other problems have arisen as can be expected with any building project but none are of a nature which have or will seriously retard progress with the systems process. No problems appear to be insurmountable.

Another problem has been communicating the program to various people who are involved in school planning and construction. Numerous groups in the State were originally negative to the systems process. The architects were always in favor of the research program, but many individuals were opposed to systems. Today the official position of the Florida Association of the American Institute of Architects is in support of the systems development program, as long as joining it is left to the client and his architect and not required by law.

At first the engineering societies, Florida Engineering Society, and the Council of Consulting Engineers of Florida, were both opposed, with a few individuals in support. The opposition has changed to a friendly and cautious appraisal of the program, with many individual engineers supporting the general concept of building systems.

Contractors, labor, Florida manufacturers and vendors have responded favorably in general when they were informed of the educational needs and objectives and how the program attempted to solve the problems. Communication has been a major problem and probably will remain so, but it is certainly less a problem than it was prior to this time.

## CURRENT PROGRAM

Phase One extended from October, 1966 through June, 1967. It was the period for evaluating the feasibility of a Florida Systems Program. Phase Two, which extended from July, 1967 through June, 1970 has two distinct parts:

1. State bidding of systems - July, 1967 through June, 1969.

2. Current program - Evaluating, assisting and writing "User Requirements" - July 1, 1969 through June, 1970.

The evaluation consists of several parts. A "feed back" study for Program 1-A is completed. The consultant who conducted the study interviewed one hundred people who were involved in the six schools which were in 1-A, to discover problems with the process, and gather opinions concerning the end product. The participants interviewed included architects, engineers, superintendents, principals and general contractors. Some problems were identified, and the study has proven to be the basis for improvements. The most persistent problem was the dissatisfaction of general contractors, and the problems related to multiple contracts. In later projects this complaint was removed by assigning prebid subsystems contractors to the general contractors for contracting.

Informal feedback of information, from participants in other programs, is gathered regularly and this information is used to revise future programs. Some buildings are incomplete for Programs 2 and 3 at this time and complete evaluation is impossible.

The Bureau of Research, School of Architecture and Fine Arts, University of Florida, is in the process of field testing the six schools in Program 1-A. Staff from the College of Engineering are also involved. These tests are to determine whether the systems meet the criteria established in the performance specifications. Laboratory test data were required for acceptance of a subsystem and field testing is to reveal whether the systems meet the requirements when used by architects and engineers to design actual buildings.

Assistance to architects, engineers and school officials continues, and a number of bids, including single schools and small

projects with more than one school, have been received since July 1, 1969. The staff and consulting engineers to the project have assisted by providing up-to-date performance specifications and advice when requested.

In one case, an architect incorporated the systems performance specifications into the architects typical prescription specifications. The program was bid successfully. Competition was maintained between manufacturers by not specifying products acceptable. The general contractors submitted all prices and only one contract was needed. On single schools this approach proves satisfactory.

"User Requirements" (Educational Specifications) for K-thru-12 programs are complete, with August, 1970 as publication date. These are being prepared by a consultant working under the supervision of the staff of the Bureau of School Facilities. The consultant is gathering the new material from education specifications, accreditation standards, research and practice. He has visited eight selected school districts to determine the program and the direction education seems to be moving.

Community College "User Requirements" are being prepared by the Institute of Higher Education, College of Education, University of Florida. The first draft is completed and a final draft due around July 1, 1970. The raw material for this project is available in written form in educational specifications and campus plans for community colleges in the State. An instrument for gathering data was developed and visits to some selected campuses were made to obtain the answers.

The development of "User Requirements" is the first step in the systems process and is directed at future programs. The information can serve as a basis for determining which systems are most needed, the needs that are common, and those that are different for the various levels of education in Florida. After a program is organized, the "User Requirements" will be the most important single source of information needed for developing performance specifications.

## RECOMMENDATIONS FOR FUTURE PROGRAMS

The prime purpose of the program is research to discover new ideas and development for the creation of new designs and new products. If a program is to continue the research it must have a practical application for actual construction. The ideas must end in brick and mortar, otherwise they may represent only interesting theory.

The first priority is to organize a higher education program to meet the special needs presented by our community colleges and universities. Most community colleges and universities in Florida have some buildings which are three or more stories in height. Most campuses are built in several stages, which dictates that many facilities will have at least two distinct uses during the early life of the space. The first buildings must house the entire program, and in some cases, the original space has housed three different functions during a five-year period. This requires easy and economical convertibility, which can be achieved best by a rational approach to development.

Some new subsystems may be added to those previously used in Florida. College and university planners are recognizing the continuing need to make space convertible over the life time of the buildings. They have also identified a need for a complex electric-electronic distribution system which could include all electrical systems such as audio call, clock, TV, learning laboratory distribution and electrical service. The electric-electronic system would organize the distribution for efficiency and would provide accessibility for future changes.

A higher education program would require a market of at least 1,000,000 square feet of space in one package to stimulate manufacturers' interest in making changes. The package should include work from at least three universities and three community colleges, which are geographically distributed, in order to guarantee that the products to be developed will have use on all campuses in the State.

A second priority for future programs is for a building system which can be ordered and delivered within 90 days, can provide the same level of learning environment and meet the same functional needs as permanently located buildings, can be moved at a cost of not over one-fourth the original cost and costs no more initially than permanent construction. It is not to fill the need for permanently located buildings but for relocatable space.

Prefabricated buildings are available now, but all of them fail to meet one or more of the requirements. If the needs are faced with a rational approach offered by the systems process, an acceptable system can be developed.

The need for "instant space" will continue and is sometimes caused by failure to plan early enough, but is also caused by surprises such as requirements that children be moved from one school to another, or the approval of funding for an educational program. Employment of personnel, and purchasing materials and equipment can be completed relatively fast when compared to planning and constructing space. This tends to exert pressure to move rapidly and buy prefabricated facilities, which consistently fall short of needs and are much too expensive in both initial cost and maintenance.

A third priority is to continue to assist architects and school districts to use the systems which are on the market. This advisory service would result in improving educational facilities in Florida by remaining in touch with the latest ideas and products which are produced by all the systems programs in North America and by constantly encouraging manufacturers to participate. Performance specifications could be revised continually as needs are identified and products become available.

A fourth priority is to develop procedures for purchasing systems on a large volume basis. The major objective of this program is cost reduction, rather than research and development. A second objective would be to control the product with performance specifications. Periodically, invitations to join would be offered to school districts and joining would be entirely voluntary. The construction can then be organized for state-wide bidding, or by dividing the State into zones which are appropriate. Zoning would be directed at increasing competition by compacting the delivery distances. More data, on the effect of location as related to volume, is necessary. A similar program is in its fourth year for purchasing school buses on a state bid. Under this program, thousands of dollars are saved by school districts in Florida. The cost of a bus is substantially the same in 1970 as was the case in 1958 in spite of inflation and numerous improvements.

Preliminary investigations indicate that a volume buying program for systems is feasible. A volume of work may be bid for which unit prices are established which can be held for an agreed upon period of time, and used for work not included in the original bid. This program would not require any actual state purchasing and no warehousing or delivery.

In order to prevent perpetuation of the use of performance requirements and to allow for innovation to continue, the requirements and products should be evaluated and revised before each bid, by continually gathering information as a basis for revising "User Requirements" and Performance Specifications. The volume of the program offered to manufacturers should be large enough to attract new competition and encourage product refinement to improve function and reduce cost. Further procedures may be warranted to provide the protective mechanism to prevent stagnation.

**********

# APPENDIX A

## CLARIFICATION OF TERMS

### Industrialization of Construction Process:

Industrialization includes pre-engineering and pre-fabrication which are directed toward shifting the work required from the building site to the shop or factory where efficiency is higher and reduces time and lowers cost. It includes standardization of parts of the buildings and pieces which are used to take advantage of the efficiency of the assembly line.

Many stock or standard plan programs have failed to meet the needs of education and ended invariably as expensive failures because the educational market is fragmented and not as large and repeating as Standard Oil Stations or Holiday Inns. The systems process has brought the development of parts and pieces for the unique requirements of education and the standardization of parts and pieces while allowing considerable design freedom to meet the many needs found locally.

### Systems Process:

The process used in school buildings systems programs in North America (including the Florida SSP) includes the following steps:

1. Identify User Needs:

   This includes the educational requirements for today and the future as found in educational specifications, code and regulation requirements, climatic conditions and other needs unique to the market area included in a project.

2. Prepare Performance Specifications:

   Architects and engineers translate User Requirements into performance requirements.

3. Industrial Development:

The response to meeting the requirements of performance specifications will vary according to the size of a particular project and the time allowed for development. For a small program, (a single building or less than 100,000 square feet), manufacturers will offer off-the-shelf solutions. For 100,000 square feet to 500,000 square feet they may offer modifications to existing products, especially if the chance of additional, similar programs is good. For the development of a new product, at least 1,000,000 square feet are required and at least a six-month period for research and development. In SSP, thus far, changes have been evolutionary from one project to another.

4. Prebidding Component Subsystems:

This refers to the receipt of the systems bids before the general contractors bids are received.

After evaluation the best subsystems bids are nominated in the SSP programs and if acceptable to separate architects, they will proceed with working drawings using details of the preselected components.

5. General Contractor Bids:

Final plans or working drawings and specifications are developed using the preselected systems.

Performance Specifications:

Performance specifications describe what the subsystems or products should do and not the product itself as is customary in typical architectural and engineering specifications for building construction. Performance specifications offer the problems and leave the solution to the ingenuity of industry. Performance

specifications have been used for the development of aircraft and space vehicles. The approach facilitates the development of new products and the coordination of subsystems which are both related to reducing cost and raising efficiency. The continued use for projects encourages modification to systems and increases competition between systems. The major problem is that the use of performance specifications requires some special explanation to those who are unfamiliar with them. Some bidders have complained about the use of performance specifications but much complaining is related to resistance to competing with others on a performance basis.

Interfacing:

Interfacing is a term which refers to where two subsystems touch or affect each other. To meet the requirements of the performance specifications, all subsystems bidders must list bidders in other categories with whom their products are compatible. For example, a structural bidder must list at least one ceiling/lighting, HVAC, and interior partition bidder with whom his subsystem is compatible and prove interface compatibility with data he is required to submit.

Normally the architect assumes responsibility for interface compatibility and he does an effective job as far as outward appearances are concerned. Structural, mechanical and electrical engineers may solve their individual problems effectively but seldom discuss compatibility of systems. Interface compatibility is required by the systems performance specifications and manufacturers are made responsible for working out problems as effectively as possible in order to offer the best possible price in competition with others. Functional efficiency and economy are required.

The problem is that inexperienced bidders usually need a great deal of communication the first time they bid on a systems program because they are unaware of what they are required to do to interface products.

Fast Track Project Delivery:

This refers to speeding the process which leads to delivery of the building to the owner primarily by overlapping some of the steps required. The fast track project delivery schedule on page 14 demonstrates this. It expresses an idea (is a management tool) for the planning and construction process to provide increased efficiency.

A P P E N D I X  B

LIST OF ALL SYSTEMS PROJECTS

PROGRAM 1-A

Bid October 12, 1967

| SCHOOL DISTRICT<br>SCHOOL LOCATION | NAME | ARCHITECT | GENERAL CONTRACTOR |
|---|---|---|---|
| BRADFORD COUNTY<br>Starke, Florida | Bradford Middle School | Don R. Morgan, Architect<br>Post Office Box 987<br>Green Cove Springs, Fla.<br>Tele.(904) 264-2561 | Drake Construction Co.<br>Post Office Box 609<br>Ocala, Florida 32670 |
| BREVARD COUNTY<br>Mims, Florida | Pinewood Elementary School | Hirshberg & Thompson, Architects<br>Post Office Box 458<br>Titusville, Florida<br>Tele. (305) 267-0711 | Julian Evans & Associates, Incorporated<br>P.O. Box 1227<br>Titusville, Florida |
| CLAY COUNTY<br>Orange Park, Fla. | Orange Park High School | Allen D. Frye & Associates<br>Architects<br>459 Kingsley Avenue<br>Orange Park, Florida<br>Tele.(904) 264-2484 | John M. Bickerstaff, Builders<br>2021 Ernest Street<br>Jacksonville, Fla. 32204 |
| COLLIER COUNTY<br>Naples, Florida | East Naples Middle School | William W. Zimmerman, Architect<br>283 Broad Avenue, South<br>Naples, Florida<br>Tele. (813) 642-4548 | William Vander Linde, Inc.<br>And Lonnie Jackson Construction Company, Inc.<br>1238 N. E. 38th Street<br>Ft. Lauderdale, Fla. 33308 |
| GLADES COUNTY<br>Moore Haven, Fla. | Moore Haven Elementary School | McBryde & Parker, Architects<br>2120 McGregor Boulevard<br>Fort Myers, Florida<br>Tele. (813) 332-1171 | William Vander Linde, Inc.<br>And Lonnie Jackson Construction Company, Inc.<br>1238 N. E. 38th Street<br>Ft. Lauderdale, Fla. 33308 |
| NASSAU COUNTY<br>Callahan, Florida | West Nassau County High School | Akel, Logan and Shafer, Architects & Engineers<br>110 Riverside Avenue<br>Jacksonville, Florida<br>Tele. (904) 356-2654 | Harris & Harris, Inc.<br>1040 Nightingale Road<br>Jacksonville, Fla. 33216 |

LEON PROGRAM

(Conducted by Architect)

Bid January 15, 1968

| SCHOOL DISTRICT<br>SCHOOL LOCATION | NAME | ARCHITECT | GENERAL CONTRACTOR |
|---|---|---|---|
| LEON COUNTY<br>Tallahassee, Fla. | W.T. Moore Elementary School | Joseph N. Clemons, Architect<br>1200 Thomasville Road<br>Tallahassee, Florida<br>Tele. (904) 385-6153 | Biltmore Construction Co.<br>Post Office Box 360<br>Clearwater, Florida 33517 |

List of All Systems Projects

APPENDIX B - Continued

PROGRAM 2

Bid August 23, 1968

| SCHOOL DISTRICT<br>SCHOOL LOCATION | NAME | ARCHITECTS | GENERAL CONTRACTOR |
|---|---|---|---|
| MANATEE COUNTY<br>Bradenton, Florida | J. Hartley Blackburn<br>Elementary School | Douglas E. Croll<br>Architect<br>1101 29th Avenue, West<br>Bradenton, Florida<br>Tele. (813) 958-8553 | Proefke Nielson Construction Company<br>P.O. Box 982<br>Dunedin, Florida 33428 |
| OKALOOSA COUNTY<br>Fort Walton Beach,<br>Florida | Fort Walton Beach<br>Senior High School | Ricks & Kendricks,<br>Architects<br>Post Office Box 1030<br>Fort Walton Beach, Fla.<br>Tele. (904) 244-5567 | Dyson Construction Co.<br>P. O. Drawer F<br>Pensacola, Florida 32502 |
| PALM BEACH COUNTY<br>West Palm Beach,<br>Florida | Dwight D. Eisenhower<br>Elementary School | Powell/Edge Partnership,<br>Architects<br>Phipps Plaza<br>West Palm Beach, Florida<br>Tele. (305) 832-1654 | W.G. Lassiter Company, Inc.<br>4801 Georgia Avenue<br>West Palm Beach, Florida |
| SAINT LUCIE COUNTY<br>Fort Pierce, Florida | Edwards Road High<br>School<br>Phase III Addition | Starratt & Asklof,<br>Architects<br>605 North 7th Street<br>Fort Pierce, Florida<br>Tele. (305) 464-1691 | Ben Wood Construction<br>Company<br>P.O. Box 416<br>Fort Pierce, Florida |
| SARASOTA COUNTY<br>Sarasota, Florida | Alta Vista Elementary<br>School | Erwin Gremli, II,<br>Architect<br>1790 Wood Street<br>Sarasota, Florida<br>Tele. (813) 955-1294 | Logan & Currin<br>1003 East Avenue N.<br>Sarasota, Florida 33577 |
| SARASOTA COUNTY<br>Sarasota, Florida | Brentwood Elementary<br>School Addition | D. Thomas Kincaid &<br>Associates<br>1274 North Palm Avenue<br>Sarasota, Florida<br>Tele. (813) 958-8553 | Frank Thyne<br>2056 Main Street<br>Sarasota, Florida 33577 |
| SARASOTA COUNTY<br>Sarasota, Florida | Fruitville Elementary<br>School Addition | West & Conyers,<br>Architects & Engineers<br>Post Office Box 1539<br>Sarasota, Florida<br>Tele. (813) 955-2341 | Robert L. Brand<br>P.O. Box 3501<br>Sarasota, Florida |
| SARASOTA COUNTY<br>Sarasota, Florida | Phillippi Shores<br>Elementary School Addn. | John E. Piercy,<br>Architect<br>615 Palmer Bank Building<br>Sarasota, Florida<br>Tele. (813) 955-0467 | John A. Hartenstine<br>3617 Jacinto<br>Sarasota, Florida |
| SARASOTA COUNTY<br>Sarasota, Florida | Wilkinson Road<br>Elementary School<br>Addition | Edward J. Seibert<br>Architect<br>25 Park Place<br>Sarasota, Florida<br>Tele. (813) 958-1356 | Rowe-Mitchell Contractors<br>1723 10th Way<br>Sarasota, Florida |

APPENDIX B - Continued

List of All Systems Projects

PROGRAM 3

| SCHOOL DISTRICT<br>SCHOOL LOCATION | NAME | ARCHITECT | GENERAL CONTRACTOR |
|---|---|---|---|
| LEON COUNTY<br>Tallahassee, Florida | Apalachee Elementary School | Forrest R. Coxen, Architect<br>Avant Building<br>Tallahassee, Florida<br>Tele. (904) 224-6317 | Albritton-Williams, Inc.<br>2025 South Monroe<br>Tallahassee, Florida 32304 |
| LEON COUNTY<br>Tallahassee, Florida | Astoria Park Elementary School | Joseph N. Clemons, Architect<br>1200 Thomasville Road<br>Tallahassee, Florida<br>Tele. (904) 385-6153 | B & H Construction Company<br>P. O. Drawer 1139<br>Quincy, Florida |
| LEON COUNTY<br>Tallahassee, Florida | Belle Vue Junior High School | Huddleston, Satterfield, Evans & Lillie, Architects & Engineers<br>1215 West Tharpe Street<br>Tallahassee, Florida<br>Tele. (904) 385-2136 | Bullard Engineering Company<br>532½ East Tennessee<br>Tallahassee, Florida |
| LEON COUNTY<br>Tallahassee, Florida | Elementary School "B" | Saxon P. Poyner<br>Architect<br>233 Office Plaza<br>Tallahassee, Florida<br>Tele. (904) 877-5447 | NO BID - PROJECT SET ASIDE. |
| LEON COUNTY<br>Tallahassee, Florida | Fairview Middle School | Barrett, Daffin & Coloney<br>Architects & Engineers<br>P.O. Box 1698<br>Tallahassee, Florida<br>Tele. (904) 224-9176 | Burns, Kirkley & Williams Company<br>Zillah Street<br>Tallahassee, Florida |
| LEON COUNTY<br>Tallahassee, Florida | New Sealey Elementary School | Mays Leroy Gray, Architect<br>547 North Monroe<br>Tallahassee, Florida<br>Tele. (904) 224-5218 | Bullard Engineering Co.<br>523½ East Tennessee<br>Tallahassee, Florida |
| LEON COUNTY<br>Tallahassee, Florida | Oak Ridge Elementary School | Robert Maybin/Warren Dixon<br>Architects<br>215 West Park Avenue<br>Tallahassee, Florida | B & H Construction Co.<br>P.O. Drawer 1139<br>Quincy, Florida |
| MANATEE COUNTY<br>Bradenton, Florida | J. Hartley Blackburn Elementary School (Cabinets Only) | Douglas E. Croll, Architect<br>1101 29th Avenue, West<br>Bradenton, Florida<br>Tele. (813) 747-1894 | NOT A GENERAL CONTRACT |
| PALM BEACH COUNTY<br>West Palm Beach, Fla. | Kirklane Elementary School | Powell/Edge Partnership<br>Phipps Plaza<br>West Palm Beach, Florida<br>Tele. (305) 832-1654 | W.G. Lassiter Company, Inc.<br>4801 Georgia Avenue<br>West Palm Beach, Florida |
| SARASOTA COUNTY<br>Sarasota, Florida | Brentwood Elementary School Addition (Cabinets Only) | D. Thomas Kincaid & Asso.<br>1274 North Palm Avenue<br>Sarasota, Florida<br>Tele. (813) 958-8853 | NOT A GENERAL CONTRACT |
| SEMINOLE COUNTY<br>Altamonte Springs, Fla. | Spring Lake Elementary School | Schweizer Associates<br>Architects/Engineers<br>174 Comstock, West<br>Winter Park, Florida<br>Tele. (305) 647-4814 | Edward White Constrn, Inc.<br>P. O. Box 2591<br>Orlando, Florida 32801 |

APPENDIX B - Continued

List of All Systems Projects

CLAY-DUVAL PROJECT

(Conducted by Architects)
Bid June 19, 1969

| SCHOOL DISTRICT SCHOOL LOCATION | NAME | ARCHITECT | GENERAL CONTRACTOR |
|---|---|---|---|
| CLAY COUNTY<br>Orange Park, Florida | Orange Park High School Addition | Allen D. Frye & Associates<br>Architects<br>459 Kingsley Avenue<br>Orange Park, Florida<br>Tele. (904) 264-2484 | R.B. Gay Construction Co.<br>P.O. Box 3995<br>Jacksonville, Florida |
| DUVAL COUNTY<br>Jacksonville, Florida | Edward H. White Senior High School | Willis & Veenstra<br>Architects<br>411 East Monroe Street<br>Jacksonville, Fla. 32202<br>Tele. (904) 355-0714 | Batson Cook Contractor<br>Florida National Bank<br>Jacksonville, Florida |
| DUVAL COUNTY<br>Jacksonville, Florida | Sandlewood Junior - Senior High Complex | Harry E. Burns, Jr.<br>Architect<br>1114 Prudential Building<br>Jacksonville, Florida<br>Tele. (904) 396-2372 | Batson Cook Contractor<br>Florida National Bank<br>Jacksonville, Florida |

MARTIN PROJECT

(Conducted by Architect)
Bid August 28, 1969

| | | | |
|---|---|---|---|
| MARTIN COUNTY<br>Jensen Beach, Florida | Jensen Beach Elementary School | Starratt & Asklof,<br>Architects<br>605 North 7th Street<br>Fort Pierce, Florida<br>Tele. (305) 464-1691 | Oden Construction Co.<br>P.O. Box 2429<br>Orlando, Florida 32802 |
| MARTIN COUNTY<br>Jensen Beach, Florida | Indiantown Middle School | Starratt & Asklof,<br>Architects<br>605 North 7th Street<br>Fort Pierce, Florida<br>Tele. (305) 464-1691 | Reinhold Construction Co.<br>P.O. Box 666<br>Cocoa, Florida |

ALACHUA-HERNANDO PROJECT

(Conducted by Architects)
Bid October 14, 1969

| | | | |
|---|---|---|---|
| ALACHUA COUNTY<br>Gainesville, Florida | Alachua Elementary School | Campbell & Salley<br>Architects<br>218 Southeast First Street<br>Gainesville, Florida 32601<br>Tele. (904) 372-8424 | WITHDREW FROM SYSTEMS PROGRAM |
| ALACHUA COUNTY<br>Gainesville, Florida | High Springs Elementary School | Adams & Hunter , Architects<br>1230 Northeast Ninth Avenue<br>Gainesville, Florida 32601<br>Tele. (904) 376-8274 | Arnold & Wright Contractors<br>904 South Main<br>Gainesville, Florida |
| HERNANDO COUNTY<br>Brooksville, Florida | Brooksville Elementary School | John W. White, Architect<br>10 West Broad Street<br>Brooksville, Florida<br>Tele. (904) 796-2130 | Forrest Hills Bldg. Co.<br>P.O. Box 273<br>Lake City, Florida |

# A P P E N D I X  C

## COSTS FOR EACH SCHOOL

INDIVIDUAL PROGRAM BID TABULATIONS

INDIVIDUAL SCHOOL PRICES FOR EACH SYSTEM

INDIVIDUAL SCHOOL COSTS ITEMIZED

PROGRAM 1-A

WEST NASSAU COUNTY HIGH SCHOOL, NASSAU COUNTY
ORANGE PARK HIGH SCHOOL, CLAY COUNTY
BRADFORD MIDDLE SCHOOL, BRADFORD COUNTY
PINEWOOD ELEMENTARY SCHOOL, BREVARD COUNTY
MOORE HAVEN ELEMENTARY SCHOOL, GLADES COUNTY
EAST NAPLES MIDDLE SCHOOL, COLLIER COUNTY
OCALA HIGH SCHOOL ADDITION, MARION COUNTY*

* OCALA HIGH SCHOOL ADDITION WITHDRAWN FROM PROGRAM AFTER RECEIPT OF SYSTEMS BIDS.

SCHOOLHOUSE SYSTEMS PROJECT - PROGRAM 1-A

October 12, 1967

BID TABULATION BY COMPATIBILITY

| STRUCTURE Manufacturer | Amount | LIGHTING/CEILING Manufacturer | Amount | AIR CONDITIONING Manufacturer | Amount | TOTAL |
|---|---|---|---|---|---|---|
| (2) Macomber | $453,495 | (2) Armstrong Cork | $364,000 | (2) Lennox Industries | $489,400 | (1) $1,306,895 |
| Romac Steel | 430,000 | Armstrong Cork | 364,000 | Hill York | 538,000 | 1,332,000 |
| Houdaille-Duval-Wright | 555,914 | Anning-Johnson | 296,287 | Lennox Industries | 514,970 | 1,367,171 |
| Rheem/Dudley | 584,989 | Anning-Johnson | 282,100 | Lennox Industries | 514,970 | 1,382,059 |
| Houdaille-Duval-Wright | 555,914 | Armstrong Cork | 364,000 | Lennox Industries | 489,400 | 1,409,314 |
| Macomber | 453,495 | Luminous Ceilings | 497,096 | Lennox Industries | 489,400 | 1,439,991 |
| Romac Steel | 430,000 | Luminous Ceilings | 497,096 | Hill York | 538,000 | 1,465,096 |
| Macomber | 453,495 | Armstrong Cork | 340,000 | ITT Nesbitt | 673,277 | 1,466,772 |
| Houdaille-Duval-Wright | 555,914 | Anning-Johnson | 296,287 | ITT Nesbitt | 645,490 | 1,497,691 |
| Rheem/Dudley | 584,989 | Anning-Johnson | 282,100 | ITT Nesbitt | 645,490 | 1,512,579 |
| Houdaille-Duval-Wright | 555,914 | Luminous Ceilings | 497,096 | Lennox Industries | 489,400 | 1,542,410 |
| Macomber | 453,495 | Luminous Ceilings | 497,096 | ITT Nesbitt | 640,701 | 1,591,292 |
| Houdaille-Duval-Wright | 555,914 | Armstrong Cork | 364,000 | ITT Nesbitt | 673,277 | 1,593,191 |
| Houdaille-Duval-Wright | 555,914 | Luminous Ceilings | 497,096 | ITT Nesbitt | 640,701 | 1,693,711 |
| Rheem/Dudley | 584,989 | Luminous Ceilings | 497,096 | ITT Nesbitt | 640,701 | 1,722,786 |

BID BREAKDOWN PER SCHOOL

| SCHOOLS | DISTRICT | STRUCTURE | (3) Cost Sq. Ft. | LIGHTING/ CEILING | (4) Cost Sq. Ft. | AIR CONDI-TIONING | (4) Cost Sq. Ft. | TOTAL COST PER SCHOOL Sq. Ft. | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| Bradford Middle School | Bradford | $ 60,357 | $1.64 | $ 45,316 | $1.30 | $ 80,441 | $2.31 | $5.25 | $ 186,114 |
| Pinewood Elem. School | Brevard | Alt.2,303<br>44,067 | 1.61 | 33,131 | 1.23 | 46,058 | 1.70 | 4.54 | 125,559 |
| Orange Park High School | Clay | 57,648 | 1.97 | 40,055 | 1.33 | 62,962 | 2.09 | 5.39 | 160,665 |
| East Naples Middle School | Collier | 116,584 | 1.54 | 102,320 | 1.49 | 129,928 | 1.88 | 4.91 | 348,832 |
| Moore Haven Elem. School | Glades | 88,026 | 1.56 | 69,941 | 1.53 | 86,286 | 1.89 | 4.98 | 244,253 |
| Library & 12 classrooms Additions Ocala High | Marion | 33,419 | 1.54 | 30,641 | 1.90 | 32,850 | 2.04 | 5.48 | 96,910 |
| West Nassau Co. High School | Nassau | 51,091 | 1.73 | 42,596 | 1.44 | 50,874 | 1.72 | 4.89 | 144,561 |
| T O T A L S | | $453,495 | | $364,000 | | $489,400 | | $5.06 | $1,306,895 |

(1) Lowest Compatible Grouping
(2) Apparent Low Bidders
(3) Cost per square foot of roof area
(4) Cost per square foot of enclosed building

WEST NASSAU COUNTY HIGH SCHOOL
Callahan, Florida
Schoolhouse Systems Project-Program 1-A
Akel, Logan & Shafer, Architects & Engineers
Harris & Harris, Inc., General Contractors

| | |
|---|---|
| BUILDING SUBSYSTEMS BIDS RECEIVED | October 12, 1967 |
| (School board directed that the subsystems contractors would contract with the general contractor when he became determined.) | |
| GENERAL CONSTRUCTION BIDS RECEIVED (rejected) | January 26, 1968 |
| GENERAL CONSTRUCTION BIDS RECEIVED (awarded) | February 16, 1968 |
| (The general contractor contracted with all subsystems contractors.) | |
| COMPLETION DATE | September 7, 1968 |

COST DATA:

| | |
|---|---|
| 1. Building subsystems | $ 181,660* |
| 2. General construction | $ 255,390 |
| Subtotal | $ 437,050 |
| 3. Sitework | $ 32,350 |
| TOTAL | $ 469,400 |

Design Capacity: 420 pupils

| | | |
|---|---|---|
| Areas - General | 30,432 | |
| - Entrances, courts, etc. @ 1/3 | 2,992 | |
| TOTAL | 33,424 | square feet |

| | |
|---|---|
| Cost/Sq.Ft. - Building subsystems (S, L/C & HVAC) | $ 4.30 |
| - Building subsystems (S, L/C, P & HVAC) | $ 5.44 |
| - Building only | $ 13.08 |
| - Total (including sitework) | $ 14.04 |
| Cost per pupil | $ 1,117.61 |

*Final adjusted costs for systems will differ slightly from the figures in the bid breakdown per school on page 40.

WEST NASSAU COUNTY HIGH SCHOOL
Callahan, Florida

GENERAL CONTRACTOR'S SCHEDULE OF COSTS FOR PAYMENTS

| NO. | ITEMS | SITEWORKS | FURNISHINGS | BUILDING ONLY | TOTALS |
|---|---|---|---|---|---|
| | | $ | $ | $ | $ |
| 1. | Bonds, layouts, etc. | | | 5,400 | 5,400 |
| 2. | Site work | | | | |
| | a. excavation, grading fill and soil treatment | | | 4,450 | 4,450 |
| | b. piling | 8,600 | | | 8,600 |
| | c. paving and curbs | 14,500 | | | 14,500 |
| | d. storm sewer | 3,600 | | | 3,600 |
| 3. | Concrete | | | | |
| | a. pile caps | 3,800 | | | 3,800 |
| | b. grade beams | | | 4,950 | 4,950 |
| | c. floor slab | | | 10,910 | 10,910 |
| | d. tie beams | | | 1,820 | 1,820 |
| | e. student entry, courtyard & principal's court | | | 3,240 | 3,240 |
| | f. steel and wire mesh | | | 4,400 | 4,400 |
| | g. walks | 1,850 | | | 1,850 |
| | h. tests | | | 400 | 400 |
| | i. lightweight deck | | | 7,300 | 7,300 |
| 4. | Masonry | | | | |
| | a. brick | | | 22,300 | 22,300 |
| | b. block | | | 11,200 | 11,200 |
| 5. | Misc. metalwork and walk cover | | | 3,100 | 3,100 |
| 6. | Carpentry | | | 4,600 | 4,600 |
| 7. | Millwork | | | 10,750 | 10,750 |
| 8. | Roofing and sheetmetal | | | 8,400 | 8,400 |
| 9. | Metal doors and frames | | | 3,800 | 3,800 |
| 10. | Aluminum windows | | | 1,600 | 1,600 |
| 11. | Glazing, fascia, alum. entrances & doors | | | 7,000 | 7,000 |
| 12. | Finish hardware | | | 4,100 | 4,100 |
| 13. | Resilient floor covering | | | 6,500 | 6,500 |
| 14. | Ceramic tile | | | 3,250 | 3,250 |
| 15. | Paint, glaze coat, caulk | | | 5,250 | 5,250 |
| 16. | Toilet partitions, accessories, flagpole | | | 1,670 | 1,670 |
| 17. | Educational equipment | | | 8,900* | 8,900* |
| 18. | Food service equipment | | | 22,800 | 22,800 |
| 19. | Carpeting | | | 4,200 | 4,200 |
| 20. | Building subsystems | | | | |
| | a. Structure (Macomber V-Lok) | | | 51,860 | 51,860 |
| | b. Lighting/Ceiling (Armstrong C-60) | | | 41,000 | 41,000 |
| | c. Partition (Aetna Aetnawall) | | | 37,900 | 37,900 |
| | d. HVAC (Lennox DMZ) | | | 50,900 | 50,900 |
| 21. | Electrical | | | 32,100 | 32,100 |
| 22. | Mechanical | | | 50,500 | 50,500 |
| 23. | Final cleanup | | | 500 | 500 |
| | Totals | $ 32,350 | | $ 437,050 | $469,400 |

* This includes science room casework, sinks, etc., home economics caseworks, sinks, stoves, refrigerators, etc.

ORANGE PARK SENIOR HIGH SCHOOL
Orange Park, Florida
Schoolhouse Systems Project-Program 1-A
Allen Frye and Associates, Architects and Engineers
John M. Bickerstaff, Builder-General Contractor

BUILDING SUBSYSTEMS BIDS RECEIVED — October 12, 1967
(School board directed that the subsystems contractors would contract with the general contractor when he became determined.)

GENERAL CONSTRUCTION BIDS RECEIVED — June 18, 1968
(Advertising for bids was delayed approximately six months awaiting funding of an approved PL 815 Project. The project was finally funded from state and local funds.)

SUBSTANTIAL COMPLETION DATE — April 5, 1969

COST DATA:

| | | |
|---|---|---|
| 1. | Building subsystems | $ 195,703* |
| 2. | General construction | $ 239,973 |
| | SUBTOTAL | $ 435,676 |
| 3. | Sitework | $ 15,566 |
| | TOTAL | $ 451,242 |

Design Capacity: 600 pupils

Area - General ..... 31,350 square feet

| | | |
|---|---|---|
| Cost/Sq.Ft. | - Building subsystems (S, L/C & HVAC) | $ 5.30 |
| | - Building subsystems (S, L/C, P & HVAC) | $ 6.24 |
| | - Building only | $ 13.90 |
| | - Total (including sitework) | $ 14.39 |
| Cost per pupil | | $ 752.07 |

*Final adjusted costs for systems will differ slightly from the figures in the bid breakdown per school on page 40.

ORANGE PARK SENIOR HIGH SCHOOL
Orange Park, Florida

GENERAL CONTRACTOR'S SCHEDULE OF COSTS FOR PAYMENTS

| NO. | ITEMS | SITEWORKS | FURNISHINGS | BUILDING ONLY | TOTALS |
|---|---|---|---|---|---|
| | | $ | $ | $ | $ |
| 1. | Performance Bond | | | 4,511 | 4,511 |
| 2. | Supervision | | | 7,210 | 7,210 |
| 3. | Clearing | | | 898 | 898 |
| 4. | Earthwork | | | 2,687 | 2,687 |
| 5. | Utilities | 1,112 | | | 1,112 |
| 6. | Curbs & gutters | 3,480 | | | 3,480 |
| 7. | Paving | 10,974 | | | 10,974 |
| 8. | Concrete | | | 21,190 | 21,190 |
| 9. | Masonry | | | 35,787 | 35,787 |
| 10. | Rough Carpentry | | | 748 | 748 |
| 11. | Miscellaneous Steel | | | 6,479 | 6,479 |
| 12. | Steel Stairs | | | 2,877 | 2,877 |
| 13. | Roofing, Insul. & Sheet Metal | | | 8,511 | 8,511 |
| 14. | Skylites | | | 200 | 200 |
| 15. | Curtain wall, glass & glazing | | | 12,299 | 12,299 |
| 16. | Driwall | | | 502 | 502 |
| 17. | Toilet partitions | | | 1,200 | 1,200 |
| 18. | Toilet accessories | | | 689 | 689 |
| 19. | Lab equipment | | | 2,410 | 2,410 |
| 20. | Metal door frames | | | 675 | 675 |
| 21. | Finish Carpentry | | | 11,710 | 11,710 |
| 22. | Finish hardware | | | 4,965 | 4,965 |
| 23. | Resilient flooring | | | 6,363 | 6,363 |
| 24. | Carpet | | | 17,991 | 17,991 |
| 25. | Quarry tile | | | 2,218 | 2,218 |
| 26. | Painting | | | 3,131 | 3,131 |
| 27. | Cement wall coating | | | 625 | 625 |
| 28. | Platform risers | | | 1,945 | 1,945 |
| 29. | Fire extinguishers | | | 133 | 133 |
| 30. | Plumbing & ventilation | | | 32,337 | 32,337 |
| 31. | Electrical | | | 49,682 | 49,682 |
| 32. | Building subsystems | | | | |
| | a. Structure (Macomber V-Lok) | | | 61,026 | 61,026 |
| | b. Lighting/Ceiling (Armstrong C-60) | | | 39,897 | 39,897 |
| | c. Partitions (Hauserman Doublewall) | | | 29,411 | 29,411 |
| | d. HVAC ( Lennox DMZ) | | | 65,369 | 65,369 |
| | Totals | $ 15,566 | $ -0- | $ 435,676 | $ 451,242 |

BRADFORD MIDDLE SCHOOL
Starke, Florida
Schoolhouse Systems Project-Program 1-A
Don R. Morgan, Architect
Drake Construction Company, General Contractor

| | |
|---|---|
| BUILDING SUBSYSTEMS BIDS RECEIVED (School board contracted separately with each subsystem contractor.) | October 12, 1967 |
| GENERAL CONSTRUCTION BIDS RECEIVED (School board contract required general contractor to administer the subsystem contracts.) | February 22, 1968 |
| SUBSTANTIAL COMPLETION DATE | August 18, 1968 |
| FULLY COMPLETED DATE | September 9, 1968 |

COST DATA:

| | | |
|---|---|---|
| 1. | Building subsystems | $ 178,069* |
| 2. | General construction | $ 235,641 |
| | SUBTOTAL | $ 413,710 |
| 3. | Furniture and sitework | $ 81,212 |
| | TOTAL | $ 494,922 |

Design Capacity: 450 pupils

| | | |
|---|---|---|
| Areas - General | 36,693 | |
| - Overhangs @ 1/3 | 900 | |
| TOTAL | 37,593 | square feet |

| | | |
|---|---|---|
| Cost/Sq.Ft. - Building subsystems (S, L/C & HVAC) | $ | 4.19 |
| - Building subsystems (S, L/C, P & HVAC) | $ | 4.74 |
| - Building only | $ | 11.00 |
| - Total (including furniture & sitework) | $ | 13.17 |
| Cost per pupil | $ | 1,099.82 |

*Final adjusted costs for systems will differ slightly from the figures in the bid breakdown per school on page 40.

BRADFORD MIDDLE SCHOOL
Starke, Florida

GENERAL CONTRACTOR'S SCHEDULE OF COSTS FOR PAYMENTS

| NO. | ITEMS | SITEWORKS | FURNISHINGS | BUILDING ONLY | TOTALS |
|---|---|---|---|---|---|
| 1. | Bonds | $ | $ | $ 1,780 | $ 1,780 |
| 2. | Temporary facilities | | | 1,100 | 1,100 |
| 3. | Site preparation | | | 3,400 | 3,400 |
| 4. | Footings | | | 5,200 | 5,200 |
| 5. | Grading and compacting | | | 2,300 | 2,300 |
| 6. | Soil treatment | | | 800 | 800 |
| 7. | Concrete | | | | |
| | a. Floor slab | | | 14,900 | 14,900 |
| | b. Concrete beams | | | 2,700 | 2,700 |
| | c. Sidewalks | 2,200 | | | 2,200 |
| 8. | Masonry | | | | |
| | a. Block | | | 14,500 | 14,500 |
| | b. Brick | | | 13,500 | 13,500 |
| 9. | Carpentry | | | | |
| | a. Rough | | | 4,500 | 4,500 |
| | b. Finish and doors | | | 3,800 | 3,800 |
| 10. | Roof deck insulation | | | 6,500 | 6,500 |
| 11. | Roofing and sheetmetal | | | 9,654 | 9,654 |
| 12. | Roll-A-Way chalkboards | | | 5,200 | 5,200 |
| 13. | Steel door frames | | | 2,200 | 2,200 |
| 14. | Glass and glazing | | | 1,200 | 1,200 |
| 15. | Alum. store front | | | 1,600 | 1,600 |
| 16. | Glasweld soffit and fascia | | | 6,700 | 6,700 |
| 17. | Finish hardware | | | 3,100 | 3,100 |
| 18. | Terrazzo | | | 1,600 | 1,600 |
| 19. | Ceramic tile, etc. | | | 1,200 | 1,200 |
| 20. | Resilient tile and base | | | 1,000 | 1,000 |
| 21. | Carpet | | | 32,700 | 32,700 |
| 22. | Paint and caulk | | | 2,000 | 2,000 |
| 23. | Spray glaze | | | 3,500 | 3,500 |
| 24. | Room names | | | 77 | 77 |
| 25. | Bath accessories | | | 450 | 450 |
| 26. | Toilet partitions | | | 2,500 | 2,500 |
| 27. | Skylights | | | 380 | 380 |
| 28. | Flagpole | | | 600 | 600 |
| 29. | Plumbing and heating | | | 60,000* | 60,000* |
| 30. | Building subsystems | | | | |
| | a. Structure (Macomber V-Lok) | | | 56,577 | 56,577 |
| | b. Lighting/Ceiling (Armstrong C-60) | | | 45,318 | 45,318 |
| | c. Partitions | | | | |
| | Folding doors (Modernfold) | | | 2,000 | 2,000 |
| | Demountable partitions (Aetna Aetnawall) | | | 18,654 | 18,654 |
| | d. HVAC (Lennox DMZ) | | | 55,520 | 55,520 |
| 31. | Electrical | | | 25,000 | 25,000 |
| 32. | Paving and drainage | 8,500 | | | 8,500 |
| 33. | Furniture | | 70,512 | | 70,512 |
| | Totals | $ 10,700 | $70,512 | $413,710 | $494,922 |

* This includes a new chiller, 2 new pumps (1-5HP and 1-10HP), a new cooling tower and 150' of 6" chilled water and hot water lines, remotely located in an existing central plant.

PINEWOOD ELEMENTARY SCHOOL
Mims, Florida
Schoolhouse Systems Project-Program 1-A
Hirshberg and Thompson, Architects
Julian Evans and Associates, Inc., General Contractor

BUILDING SUBSYSTEMS BIDS RECEIVED — October 12, 1967
(Building subsystems bidders to be assigned as subcontractors to the general contractor when he became determined.)

GENERAL CONSTRUCTION BIDS RECEIVED — February 20, 1968
(Bids rejected - exceeded budget - preparations made to rebid.)

COMPLETION DATE, beneficial occupancy - December 26, 1968
(students actually occupied the school in February 1969)

COST DATA:

| | | |
|---|---|---|
| 1. | Building subsystems | $ 173,854* |
| 2. | General construction | 228,388 |
| | SUBTOTAL | $ 402,242 |
| 3. | Furniture and sitework | $ 89,988 |
| | TOTAL | $ 492,230 |

Design Capacity: 480 pupils

| | | |
|---|---|---|
| Areas - General | 27,935 | |
| - Porches, etc. @ 1/2 | 936 | |
| TOTAL | 28,871 | square feet. |

| | | |
|---|---|---|
| Cost/Sq.Ft. - Building subsystems (S, L/C & HVAC) | $ | 4.64 |
| - Building subsystems (S, L/C, P & HVAC) | $ | 6.02 |
| - Building only | $ | 13.93 |
| - Total (including furniture & sitework) | $ | 17.05 |

Cost per pupil $ 1,025.48

*Final adjusted costs for systems will differ slightly from the figures in the bid breakdown per school on page 40.

PINEWOOD ELEMENTARY SCHOOL
Mims, Florida

GENERAL CONTRACTOR'S SCHEDULE OF COSTS FOR PAYMENTS

| NO. | ITEMS | SITEWORKS $ | FURNISHINGS $ | BUILDING ONLY $ | TOTALS $ |
|---|---|---|---|---|---|
| 1. | Sitework | | | | |
| | a. Clear & grub | | | 5,030 | 5,030 |
| | b. Cut & fill | | | 6,860 | 6,860 |
| | c. Paving & base | 14,737 | | | 14,737 |
| | d. Marl (grass area) & grass | 11,060 | | | 11,060 |
| | e. Concrete work in site (inlets, sidewalks, play area pipe, etc. | 5,610 | | | 5,610 |
| | f. Clay infield in diamond | 260 | | | 260 |
| | g. Sitework engineering | 530 | | | 530 |
| 2. | Concrete slab | | | 32,145 | 32,145 |
| 3. | Masonry | | | 5,712 | 5,712 |
| 4. | Roofing & sheetmetal | | | 15,489 | 15,489 |
| 5. | Stucco | | | 4,250 | 4,250 |
| 6. | Glazing/storefront | | | 4,669 | 4,669 |
| 7. | Casework | | | 42,175 | 42,175 |
| 8. | Misc./carpentry/concrete | | | 33,218 | 33,218 |
| 9. | Terrazzo | | | 2,010 | 2,010 |
| 10. | Ceramic Tile | | | 2,480 | 2,480 |
| 11. | Paint | | | 3,905 | 3,905 |
| 12. | Carpet | | | 25,615 | 25,615 |
| 13. | Building subsystems | | | | |
| | a. Structure (Macomber V-Lok) | | | 49,520 | 49,520 |
| | b. Lighting/Ceiling (Armstrong C-60) | | | 35,381 | 35,381 |
| | c. Interior partitions (Donn Crusader) | | | 39,770 | 39,770 |
| | d. HVAC (Lennox DMZ) | | | 49,183 | 49,183 |
| 14. | Mechanical | | | 23,500 | 23,500 |
| 15. | Electrical | | | 46,125 | 46,125 |
| 16. | Furniture | | 28,000 | | 28,000 |
| 17. | Sewage disposal | 14,000 | | | 14,000 |
| 18. | Water well & treatment | 12,071 | | | 12,071 |
| | SUBTOTALS: | $ 58,268 | $ 28,000 | $ 427,037 | $513,305 |
| | CHANGE ORDERS | | | | |
| | #1. General rearrangement | | | (-) 24,321 | (-)24,321 |
| | #2. Storm drains | (+) 2,077 | | | (+) 2,077 |
| | #3. Electric conduit to well | | | (+) 326 | (+) 326 |
| | #4. Grass Seed | (+) 1,643 | | | (+) 1,643 |
| | #5. Four (4) platforms | | | (-) 800 | (-) 800 |
| | SUBTOTALS: | (+) 3,720 | -0- | (-) 24,795 | (-)21,075 |
| | TOTALS: | $ 61,988 | $ 28,000 | $ 402,242 | $492,230 |

MOORE HAVEN ELEMENTARY SCHOOL
Moore Haven, Florida
Schoolhouse Systems Project-Program 1-A
McBryde and Parker, Architects
William Vander Linde Inc. & Lonnie Jackson Construction Company, Inc.

BUILDING SUBSYSTEMS BIDS RECEIVED — October 12, 1967
(School board directed that the subsystems contractors would contract with the general contractor when he became determined.)

GENERAL CONSTRUCTION BIDS RECEIVED — May 15, 1968
(Contractor bid to complete the work in 200 days which would have been November 21, 1968.)

COMPLETION DATE — August 1, 1969
(Court actions had considerable effect upon the Board's completion date requirements and the contractor was given a significant extension of time.)

COST DATA:

| | |
|---|---|
| 1. Building subsystems | $ 268,620* |
| 2. General construction | $ 431,557 |
| Subtotal | $ 700,177 |
| 3. Sitework | 5,000 |
| TOTAL | $ 705,177 |

Design Capacity: 770 pupils

Areas - General @ full value
- Covered walks @ ½
- Overhangs @ 1/3
- Total ..... 48,498 square feet

| | |
|---|---|
| Cost/sq.ft. - Building subsystems (S,L/C & HVAC) | $ 4.67 |
| - Building subsystems (S,L/C, P & HVAC) | $ 5.53 |
| - Building only | $ 14.44 |
| - Total (including sitework) | $ 14.54 |

Cost per pupil ..... $915.81

*Final adjusted costs for systems will differ slightly from the figures in the bid breakdown per school on page 40.

MOORE HAVEN ELEMENTARY SCHOOL
Moore Haven, Florida

GENERAL CONTRACTOR'S SCHEDULE OF COSTS FOR PAYMENTS

| NO. | ITEMS | SITEWORKS | FURNISHINGS | BUILDING ONLY | TOTALS |
|---|---|---|---|---|---|
| 1. | Permits and Bonds | $ | $ | $ 4,870 | $ 4,870 |
| 2. | Excavation & grading | | | 3,650 | 3,650 |
| 3. | Concrete | | | 39,078 | 39,078 |
| 4. | Reinforcing steel | | | 4,450 | 4,450 |
| 5. | Masonry | | | 39,304 | 39,304 |
| 6. | Misc. metal | | | 1,568 | 1,568 |
| 7. | Carpentry | | | 13,132 | 13,132 |
| 8. | Millwork | | | 24,391 | 24,391 |
| 9. | Waterproofing and Dampproofing | | | 714 | 714 |
| 10. | Roofing and sheetmetal | | | 38,300 | 38,300 |
| 11. | Caulking | | | 1,238 | 1,238 |
| 12. | Plastering | | | 9,960 | 9,960 |
| 13. | Dry wall | | | 19,300 | 19,300 |
| 14. | Glazing | | | 7,000 | 7,000 |
| 15. | Painting | | | 9,532 | 9,532 |
| 16. | Finish hardware | | | 3,432 | 3,432 |
| 17. | Finish flooring | | | 3,600 | 3,600 |
| 18. | Ceramic tile | | | 4,835 | 4,835 |
| 19. | Electrical | | | 45,200 | 45,200 |
| 20. | Plumbing | | | 26,146 | 26,146 |
| 21. | Storm drainage | 5,000 | | | 5,000 |
| 22. | Carpet | | | 33,000 | 33,000 |
| 23. | Concrete covered walks | | | 40,000 | 40,000 |
| 24. | Misc. specialties | | | 16,404 | 16,404 |
| 25. | Building subsystems | | | | |
| | a. Structure (Macomber V-Lok) | | | 77,480 | 77,480 |
| | b. Lighting/Ceiling (Armstrong C-60) | | | 68,286 | 68,286 |
| | c. Partitions (Malone) | | | 42,227 | 42,227 |
| | d. HVAC (Lennox DMZ) | | | 80,627 | 80,627 |
| 26. | General conditions | | | 28,276 | 28,276 |
| 27. | Supervision | | | 10,900 | 10,900 |
| | C.O's #1, #2, #3 | | | 3,277 | 3,277 |
| | Totals | $ 5,000 | 0 | 700,177 | 705,177 |

EAST NAPLES MIDDLE SCHOOL
Naples, Florida
Schoolhouse Systems Project-Program 1-A
William W. Zimmerman, AIA, Architect
William Vander Linde, Inc. and Lonnie Jackson Construction Co., Inc.

BUILDING SUBSYSTEMS BIDS RECEIVED — October 12, 1967
(School board directed that the subsystems contractors would contract with the general contractor when he became determined.)
GENERAL CONSTRUCTION BIDS RECEIVED — March 15, 1968
COMPLETION DATE (substantial completion) — October 15, 1968

COST DATA:

| | | |
|---|---|---|
| 1. | Building subsystems | $ 435,719* |
| 2. | General construction | $ 621,942 |
| | Subtotal | $1,057,661 |
| 3. | Sitework | 34,039 |
| | TOTAL | $1,091,700 |

Design Capacity: 735 pupils

| | | |
|---|---|---|
| Areas - | General | 73,988 |
| - | Porches, covered walks @ ½ | 2,384 |
| - | Finished, enclosed space @ 1/3 | 1,138 |
| | TOTAL | 77,510 square feet |

| | | |
|---|---|---|
| Cost/sq.ft. - | Building subsystems (S,L/C & HVAC) | $ 4.51 |
| - | Building subsystems (S,L/C, P & HVAC) | $ 5.62 |
| - | Building only | $ 13.65 |
| - | Total (including sitework) | $ 14.08 |

Cost per pupil — $ 1,485.31

*Final adjusted costs for systems will differ slightly from the figures in the bid breakdown per school on page 40.

EAST NAPLES MIDDLE SCHOOL
Naples, Florida

GENERAL CONTRACTOR'S SCHEDULE OF COSTS FOR PAYMENTS

| NO. | ITEMS | SITEWORKS $ | FURNISHINGS $ | BUILDING ONLY | TOTALS |
|---|---|---|---|---|---|
| 1. | Job preparation | | | | |
| | a. Bonds, builders risk, etc. | | | $ 7,825 | $ 7,825 |
| | b. Sub-contractors bonds | | | 782 | 782 |
| | c. Insurance | | | 5,932 | 5,932 |
| 2. | Supervision | | | 12,706 | 12,706 |
| 3. | General conditions | | | 63,500 | 63,500 |
| 4. | Site preparation | | | | |
| | a. Labor, layout, excavation | | | 5,325 | 5,325 |
| | b. Soil treatment | | | 695 | 695 |
| 5. | Concrete | | | | |
| | a. Concrete materials | | | 21,200 | 21,200 |
| | b. Rebars and mesh | | | 3,100 | 3,100 |
| | c. Form work | | | 10,650 | 10,650 |
| 6. | Labor construction carpentry | | | 7,280 | 7,280 |
| 7. | Lumber and misc. specialties | | | 8,210 | 8,210 |
| 8. | Masonry | | | 78,766 | 78,766 |
| 9. | Aluminum work | | | | |
| | a. Windows and sills | | | 3,515 | 3,515 |
| | b. Entrance and glazing | | | 44,000 | 44,000 |
| 10. | Millwork | | | 24,000 | 24,000 |
| 11. | Misc. iron | | | 12,700 | 12,700 |
| 12. | Roofing and sheetmetal | | | 52,000 | 52,000 |
| 13. | Lath and plaster | | | 7,600 | 7,600 |
| 14. | Resilient flooring | | | 16,544 | 16,544 |
| 15. | Painting | | | 9,100 | 9,100 |
| 16. | Caulking | | | 1,700 | 1,700 |
| 17. | Kitchen equipment | | | 20,000 | 20,000 |
| 18. | Tile work | | | 18,250 | 18,250 |
| 19. | Plumbing | | | 54,000 | 54,000 |
| 20. | Mechanical | | | 9,000 | 9,000 |
| 21. | Electrical | | | 71,662 | 71,662 |
| 22. | Building subsystems | | | | |
| | a. Structural (Macomber V-Lok) | | | 125,455 | 125,455 |
| | b. Lighting/Ceiling (Armstrong C-60) | | | 99,980 | 99,980 |
| | c. Partitions (Donn, Modernfold) | | | 86,356 | 86,356 |
| | d. HVAC (Lennox DMZ) | | | 123,928 | 123,928 |
| 23. | Paving and fill | 18,298 | | | 18,298 |
| 24. | Sewage plant | 15,741 | | | 15,741 |
| 25. | Carpet (Bids rec'd in May) | | | 51,900 | 51,900 |
| | Totals | $ 34,039 | 0 | $1,057,661 | $1,091,700 |

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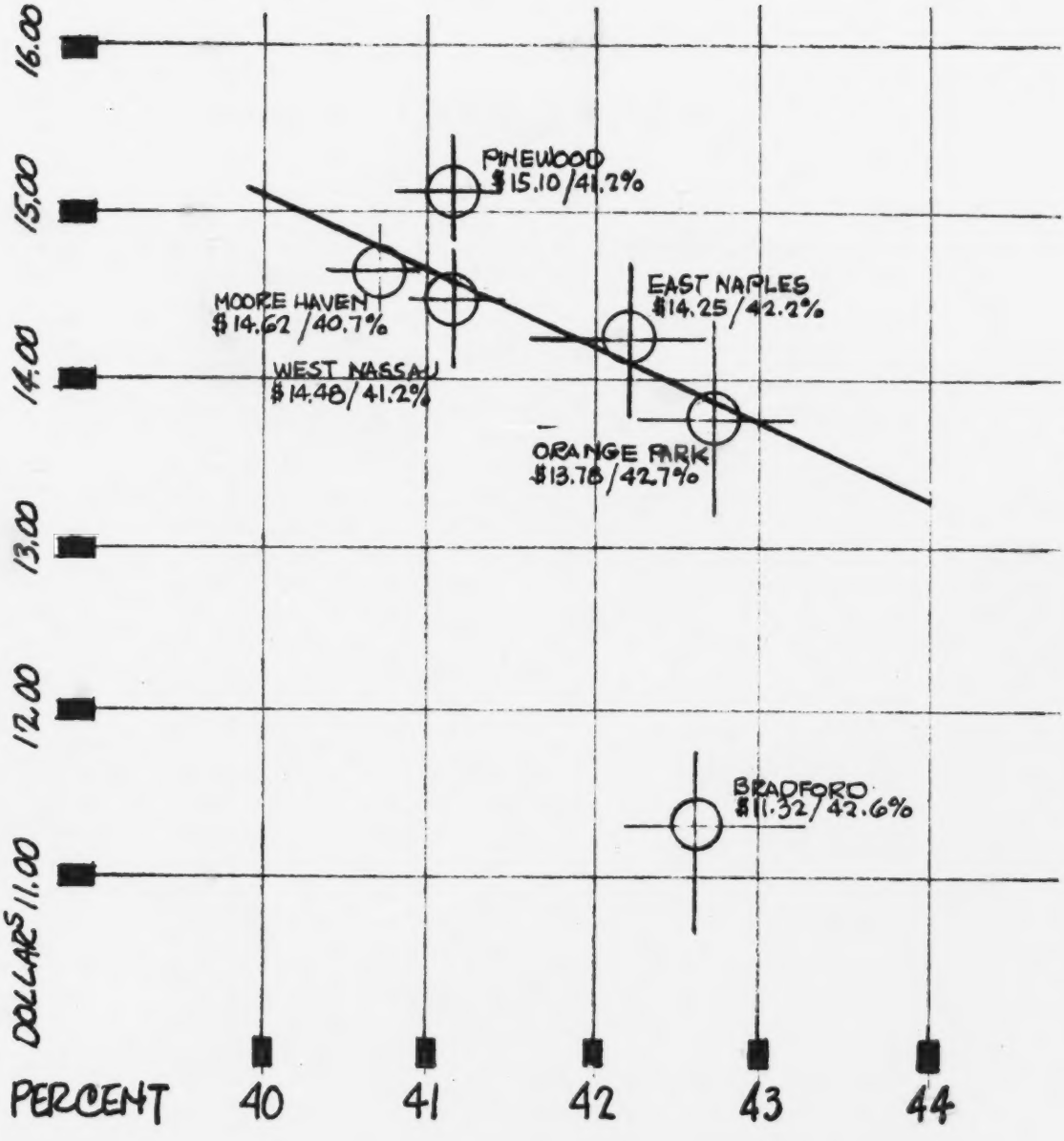


COST PER SQUARE FOOT (BUILDING ONLY)
COMPARED TO % SYSTEM IN BUILDING COST.

# APPENDIX D

## CONSTRUCTION COST DATA

The Survey Section, Bureau of School Facilities, Elementary-Secondary Division, gathered the following information and tabulated the data. The data is gathered and the report submitted to the U.S. Office of Education to comply with requirements of Public Law 815. The instructions ask that the total floor area include outside wall dimensions with covered passageways computed at one-half the actual area.

Note that reporting was the responsibility of someone in each school district and the normal variances can be expected which result from having a number of different people make judgments. For example, fixing pupil capacity requires some judgment.

EXPLANATION OF COST DATA ITEMS FOR SCHOOLS CONSTRUCTED
(New School Plants) During 1967-68

Information appearing in the attached table was taken from OE-4038, REPORT OF CONTRACT AWARDED for 1967-68, which is the official form used by the United States Office of Education to gather information needed to determine the average per pupil cost for minimum school facilities. The data contained in the table are restricted to new school plants only.

The total cost of each school plant includes the following:

Construction Contract
Legal and Administrative Expenses
Architectural and Engineering Expenses
Furniture and Equipment
Site Improvement

Following are average cost figures for twenty-six (26) elementary and seventeen (17) secondary school plants:

| Elementary | Secondary |
|---|---|
| $1,081.16 (Per Pupil | $1,334.80 (Per Pupil) |
| $16.87 (Per Sq.Ft. total cost) | $16.17 (Per Sq.Ft. total cost) |
| $14.35 (Per Sq.Ft. contract only) | $13.87 (Per Sq.Ft. contract only) |
| 85% (total expenditure for construction contract) | 86% (total expenditure for construction contract) |
| $32,059 (Per teacher station) | $35,137 (Per teacher station) |

Because of the variance of practice among the counties in the state in providing equipment and site improvement at new school centers, it is believed the figures contained in the column "Cost Per Square Foot Contract Only" would provide the most valid comparison for school construction cost among the counties of the state.

## CONSTRUCTION COST DATA

New School Contracts Awarded July 1967 through June 30, 1968

| COUNTY | SCHOOL | TEACHER STATIONS | PUPIL CAPACITY | TOTAL SQUARE FOOTAGE | CONTRACT COST | LEGAL AND ADMINI-STRATIVE |
|---|---|---|---|---|---|---|
| ELEMENTARY SCHOOLS | | | | | | |
| BAY | Northside Elem. | 16 | 444 | 48,456 | $ 634,880.00 | $ ---- |
| BREVARD | Anderson Elem. | 38 | 840 | 44,174 | 703,270.00 | 11,137.00 |
| | Allen Elem. | 24 | 720 | 35,230 | 527,717.00 | 11,350.00 |
| | Carrol Elem. | 24 | 720 | 35,230 | 531,926.00 | 16,576.00 |
| | Imperial Estates El. | 24 | 720 | 40,640 | 605,335.00 | 11,585.00 |
| | Old Dixie Elem. | 24 | 720 | 40,640 | 605,470.00 | 11,329.00 |
| | Pinewood Elem. | 16 | 480 | 27,020 | 479,234.00 | 11,277.00 |
| | Stevenson Elem. | 24 | 720 | 35,230 | 540,275.00 | 15,916.00 |
| BROWARD | Lloyd Estates Elem. | 16 | 480 | 33,400 | 430,833.68 | 9,782.00 |
| DADE | Palm Springs North | 28 | 840 | 44,305 | 706,400.00 | 10,000.00 |
| | Kendale Elem. | 22 | 660 | 37,634 | 577,700.00 | 7,500.00 |
| ESCAMBIA | Reinhardt Holm Elem. | 20 | 600 | 21,990 | 408,582.00 | ---- |
| DIXIE | Cross City Elem. | 24 | 720 | 43,734 | 496,838.00 | ---- |
| DUVAL | Finegan Elem. | 24 | 720 | 40,878 | 511,548.30 | 1,802.25 |
| HILLSBOROUGH | Crestwood Elem. | 26 | 720 | 49,570 | 683,937.78 | 25.00 |
| | Kingswood Elem. | 18 | 500 | 43,457 | 571,282.62 | 25.00 |
| LEON | W.T. Moore Elem. | 30 | 870 | 60,000 | 950,279.00 | 149.50 |
| OKALOOSA | Kenwood Elem. | 24 | 720 | 40,560 | 592,930.00 | ---- |
| | James E. Plew Elem. | 14 | 420 | 30,420 | 466,829.00 | ---- |
| ORANGE | Apopka Elem. | 16 | 480 | 37,329 | 494,200.00 | 2,396.74 |
| | Ivey Lane Elem. | 25 | 735 | 47,829 | 571,700.00 | 1,637.05 |
| | Lake Sybolia Elem. | 16 | 480 | 37,329 | 471,329.85 | 1,652.88 |
| | Riverside Elem. | 16 | 480 | 37,329 | 500,685.00 | 1,076.23 |
| | Windermere Elem. | 16 | 480 | 37,329 | 478,351.47 | 1,743.92 |
| SUWANNEE | Live Oak Elem. | 22 | 660 | 38,815 | 432,972.00 | 850.00 |
| VOLUSIA | New Elem. "I" | 8 | 240 | 16,900 | 240,986.20 | 150.00 |
| ELEMENTARY TOTALS | | 521 | 15,449 | 990,338 | $14,215,036.90 | $127,960.57 |
| SECONDARY SCHOOLS | | | | | | |
| BRADFORD | Bradford Middle | 24 | 730 | 34,800 | 415,900.00 | $ ---- |
| BROWARD | Broward Hills High | 78 | 2,002 | 164,900 | 2,399,013.45 | 26,513.77 |
| DUVAL | Highlands Jr. | 49 | 1,148 | 120,448 | 1,437,045.00 | 544.94 |
| GADSDEN | New Quincy High | 27 | 600 | 84,410 | 1,223,584.46 | ---- |
| OKALOOSA | Crestview Senior | 41 | 1,225 | 110,000 | 1,896,780.00 | ---- |
| HERNANDO | Brooksville Jr. | 9 | 270 | 9,695 | 151,940.00 | 147.50 |
| LEE | Cypress Lake Sr. | 28 | 748 | 66,800 | 1,057,880.00 | ---- |
| NASSUA | W. Nassua County Hi. | 13 | 325 | 29,500 | 471,372.86 | 554.56 |
| ORANGE | Meadowbrook Jr. | 37 | 1,350 | 103,614 | 1,270,395.00 | 4,512.40 |
| | Conway Jr. High | 48 | 1,500 | 103,614 | 1,387,798.00 | 3,358.14 |
| POLK | Ft. Meade Jr.-Sr. | 24 | 750 | 76,477 | 852,565.00 | ---- |
| PUTNAM | Crescent City Jr.-Sr. | 25 | 792 | 75,609 | 920,344.00 | ---- |
| | Interlachen Jr.-Sr. | 23 | 712 | 77,374 | 903,161.00 | ---- |
| SANTA ROSA | Middle Grade School | 30 | 900 | 50,544 | 610,848.00 | 625.23 |
| SEMINOLE | Lakeview Jr. | 26 | 711 | 45,240 | 537,312.00 | ---- |
| WALTON | Walton Sr. | 26 | 780 | 86,542 | 1,127,230.00 | ---- |
| VOLUSIA | Deltona Jr. | 11 | 320 | 29,340 | 451,706.93 | 150.00 |
| SECONDARY TOTALS | | 519 | 14,863 | 1,268,970 | $17,114,875.70 | $ 36,406.44 |
| GRAND TOTALS | | 1,090 | 30,312 | 2,259,245 | $31,329,912.60 | $164,367.01 |

## CONSTRUCTION COST DATA

New School Contracts Awarded July 1967 through June 30, 1968

| ARCHITECT AND ENGINEERING | FURNITURE AND EQUIPMENT | SITE IMPROVEMENT | TOTAL COST | COST PER PUPIL | COST SQUARE FOOT | COST PER SQ.FT. CONTRACT ONLY | CONST'N CONTR.% of TOTAL | COST PER TEACHER STATION |
|---|---|---|---|---|---|---|---|---|
| $ 39,901.55 | $ 40,000.00 | $ 4,413.98 | $ 719,195.53 | $1,619.81 | $14.84 | $13.10 | 82 | $44,950 |
| 39,921.00 | 92,000.00 | --- | 846,328.00 | 1,007.53 | 19.16 | 15.92 | 83 | 30,226 |
| 15,831.00 | 79,600.00 | --- | 634,498.00 | 881.25 | 18.01 | 14.98 | 83 | 26,437 |
| 30,506.00 | 79,600.00 | --- | 658,608.00 | 914.73 | 18.69 | 15.10 | 81 | 27,442 |
| 34,543.00 | 79,600.00 | --- | 731,063.00 | 1,015.37 | 17.99 | 14.90 | 82 | 30,461 |
| 18,164.00 | 79,600.00 | --- | 714,563.00 | 992.45 | 17.58 | 14.90 | 85 | 29,773 |
| 26,552.00 | 48,000.00 | --- | 565,063.00 | 1,177.21 | 20.91 | 17.74 | 85 | 35,316 |
| 16,208.00 | 79,600.00 | --- | 651,999.00 | 904.44 | 18.48 | 15.34 | 83 | 27,133 |
| 9,956.79 | 34,331.76 | --- | 484,904.23 | 1,010.22 | 14.52 | 12.90 | 89 | 30,306 |
| 29,500.00 | 90,000.00 | 114,000.00 | 949,900.00 | 1,130.83 | 21.44 | 15.94 | 74 | 33,925 |
| 50,500.00 | 75,000.00 | 3,500.00 | 714,200.00 | 1,082.12 | 18.98 | 15.35 | 81 | 32,464 |
| 19,479.10 | 33,443.65 | 2,500.00 | 464,004.75 | 773.34 | 21.10 | 18.58 | 88 | 23,200 |
| 31,128.00 | 41,250.00 | 7,500.00 | 576,261.00 | 829.66 | 13.18 | 11.35 | 86 | 24,011 |
| 17,054.51 | 23,931.33 | 16,480.50 | 570,816.89 | 792.80 | 13.96 | 12.51 | 90 | 23,784 |
| 41,036.27 | 40,000.10 | 28,300.00 | 793,299.15 | 1,101.67 | 16.00 | 13.80 | 86 | 30,512 |
| 34,276.96 | 26,250.00 | 21,121.93 | 652,956.51 | 1,305.91 | 15.00 | 13.15 | 87 | 36,275 |
| 49,889.65 | 125,500.00 | 88,713.00 | 1,214,531.15 | 1,396.70 | 20.25 | 15.84 | 78 | 40,504 |
| 29,646.50 | 41,068.89 | --- | 663,645.39 | 921.73 | 16.36 | 14.62 | 89 | 27,652 |
| --- | 25,219.55 | --- | 492,048.55 | 1,171.54 | 16.18 | 15.35 | 95 | 35,146 |
| 15,464.93 | 32,150.00 | 3,715.00 | 547,926.67 | 1,141.51 | 14.68 | 13.24 | 90 | 34,245 |
| 19,435.94 | 40,323.00 | 11,368.82 | 644,464.81 | 876.82 | 13.47 | 11.95 | 89 | 25,779 |
| 15,558.79 | 26,000.00 | 1,500.00 | 516,047.52 | 1,075.10 | 13.82 | 12.63 | 91 | 32,253 |
| 16,505.62 | 36,323.00 | --- | 554,589.85 | 1,155.40 | 14.85 | 13.41 | 90 | 34,662 |
| 17,982.29 | 26,000.00 | 5,475.00 | 529,552.68 | 1,103.23 | 14.19 | 12.81 | 90 | 33,097 |
| 28,508.51 | 65,320.00 | --- | 527,650.51 | 799.47 | 13.59 | 11.45 | 82 | 23,904 |
| 14,459.00 | 14,200.00 | 15,000.00 | 284,795.20 | 1,186.65 | 16.85 | 14.26 | 85 | 35,599 |
| $ 662,009.41 | $1,374,311.28 | $323,594.23 | $16,702,912.39 | $1,081.16 | $16.87 | 14.35 | 85 | $32,059 |
| $ 24,295.00 | $ 70,000.00 | $ 7,000.00 | $ 517,195.00 | $ 708.49 | $14.86 | $11.95 | 80 | $21,548 |
| 81,945.37 | 358,950.00 | 55,000.00 | 2,921,422.59 | 1,459.25 | 17.72 | 14.55 | 82 | 34,454 |
| 67,796.58 | 202,999.98 | 1,500.00 | 1,709,886.50 | 1,489.45 | 14.20 | 11.93 | 84 | 34,836 |
| 67,260.00 | 250,000.00 | 15,000.00 | 1,555,844.46 | 2,593.07 | 18.46 | 14.50 | 78 | 57,604 |
| 94,839.00 | 180,000.00 | --- | 2,171,619.00 | 1,772.75 | 19.74 | 17.24 | 87 | 52,966 |
| 9,116.40 | 21,800.00 | 7,500.00 | 190,503.90 | 705.57 | 19.65 | 15.67 | 80 | 21,167 |
| 63,473.00 | 60,000.00 | 3,000.00 | 1,184,353.00 | 1,583.30 | 17.73 | 15.84 | 89 | 42,298 |
| 39,165.49 | 26,007.64 | --- | 537,100.45 | 1,652.62 | 18.21 | 15.98 | 88 | 41,315 |
| 42,764.28 | 70,118.00 | 45,820.65 | 1,433,610.33 | 1,061.93 | 13.84 | 12.26 | 88 | 38,736 |
| 34,126.96 | 116,478.00 | 16,610.00 | 1,558,371.10 | 1,038.91 | 15.04 | 13.39 | 89 | 32,466 |
| 47,657.46 | 88,000.00 | 37,500.00 | 1,025,722.46 | 1,367.63 | 13.41 | 11.15 | 83 | 42,738 |
| 55,220.64 | 17,907.82 | 8,567.50 | 1,002,039.96 | 1,265.20 | 13.25 | 12.17 | 92 | 40.082 |
| 54,189.66 | 23,642.80 | --- | 980,993.46 | 1,377.80 | 12.68 | 11.67 | 92 | 42,652 |
| 36,651.00 | 30,000.00 | 385.00 | 678,509.23 | 753.90 | 13.42 | 12.09 | 90 | 22,617 |
| --- | --- | --- | 537,312.00 | 755.71 | 11.88 | 11.88 | 100 | 20,666 |
| 67,634.00 | 112,723.00 | --- | 1,307,587.00 | 1,676.40 | 15.11 | 13.03 | 86 | 50,292 |
| 25,970.42 | 24,200.00 | 25,000.00 | 527,027.35 | 1,646.96 | 17.96 | 15.40 | 86 | 47,912 |
| $ 812,105.26 | $1,652,827.24 | $222,883.15 | $19,839,097.79 | $1,334.80 | $15.63 | $13.49 | 86 | $38,226 |
| $1,474,114.67 | $3,027,138.52 | $546,477.38 | $36,542,010.18 | $1,205.48 | $16.17 | $13.87 | 86 | $35,137 |

EXPLANATION OF COST DATA ITEMS FOR SCHOOLS CONSTRUCTED
(New School Plants) During 1968-69

Information appearing in the attached table was taken from OE-4038, REPORT OF CONTRACT AWARDED for 1968-69, which is the official form used by the United States Office of Education to gather information needed to determine the average per pupil cost for minimum school facilities. The data contained in the table are restricted to new school plants only.

The total cost of each school plant includes the following:

Construction Contract
Legal and Administrative Expenses
Architectural and Engineering Expenses
Furniture and Equipment
Site Improvement

Following are average cost figures for thirty-four (34) elementary and eighteen (18) secondary school plants:

| Elementary | Secondary |
|---|---|
| $1,299.83 (Per Pupil) | $1,914.40 (Per Pupil) |
| $19.06 (Per Sq.Ft. Total Cost) | $19.11 (Per Sq.Ft. Total Cost) |
| $16.44 (Per Sq.Ft. Contract Only) | $15.97 (Per Sq.Ft. Contract Only) |
| 80% (Total expenditure for construction contract) | 80% (Total expenditure for construction contract) |
| $34,782 (Per teacher station) | $51,544 (Per teacher station) |

ALL CONSTRUCTION

$1,628.11 (Per Pupil)
$19.10 (Per Sq.Ft. Total Cost)
$16.15 (Per Sq.Ft. Contract only)
80% (Percent of total expenditure construction costs)
$43,710 (Per teacher station)

Because of the variance of practice among the counties in the state in providing equipment and site improvement at new school centers, it is believed the figures contained in the column "Cost Per Square Foot Contract Only" would provide the most valid comparison for school construction cost among the counties of the state.

## CONSTRUCTION COST DATA

New School Contracts Awarded July 1, 1968 through June 30, 1969

| COUNTY | SCHOOL | TEACHER STATIONS | PUPIL CAPACITY | TOTAL SQUARE FOOTAGE | CONTRACT COST | LEGAL AND ADMINI-STRATIVE |
|---|---|---|---|---|---|---|
| ELEMENTARY SCHOOLS | | | | | | |
| ALACHUA | Glen Springs Elem. | 25 | 775 | 48,594 | $ 788,125.00 | --- |
| | Prairie View Elem. | 25 | 775 | 48,594 | 789,503.00 | --- |
| | Marjorie K. Rawlings | 25 | 775 | 48,594 | 806,713.00 | --- |
| BROWARD | Castle Hill Elem. | 28 | 650 | 45,808 | 682,500.00 | $ 3,767.00 |
| | Coconut Creek Elem. | 28 | 650 | 45,808 | 677,000.00 | 3,458.00 |
| | Cypress Elem. | 28 | 650 | 45,808 | 681,000.00 | 3,767.00 |
| | Dwight D.Eisenhower | 28 | 650 | 45,998 | 700,000.00 | 5,083.00 |
| | Fairway Elem. | 28 | 650 | 47,046 | 685,340.00 | 13,573.00 |
| | Hollywood Central | 28 | 650 | 40,743 | 603,359.00 | 3,359.00 |
| | Hollywood Park | 28 | 650 | 45,808 | 682,500.00 | 3,773.00 |
| | Palmview Elem. | 28 | 650 | 45,808 | 673,000.00 | 5,396.00 |
| | Annabel C. Perry | 28 | 650 | 45,808 | 689,000.00 | 3,515.00 |
| | Royal Palm Elem. | 28 | 650 | 45,808 | 668,000.00 | 4,780.00 |
| | Sable Palm Elem. | 28 | 650 | 47,046 | 688,207.00 | 15,474.00 |
| | Village Elem. | 28 | 650 | 47,046 | 695,764.00 | 16,161.00 |
| DADE | Arcola Lake Elem. | 31 | 900 | 55,639 | 1,025,750.00 | 8,000.00 |
| | Bel-Aire Elem. | 22 | 640 | 41,370 | 835,000.00 | 2,000.00 |
| | Greenglade Elem. | 22 | 640 | 36,911 | 804,900.00 | 3,000.00 |
| | Miami Gardens Elem. | 22 | 640 | 41,370 | 829,629.00 | 3,000.00 |
| | Miami Lakes Elem. | 22 | 640 | 36,911 | 816,000.00 | 2,000.00 |
| | Norwood Elem. | 22 | 640 | 36,911 | 817,789.00 | 3,000.00 |
| | Olinda Elem. | 31 | 900 | 55,630 | 986,000.00 | 10,000.00 |
| | Primary School A | 12 | 360 | 20,000 | 495,000.00 | 2,000.00 |
| HIGHLANDS | Lake Placid Elem. | 19 | 570 | 37,465 | 545,398.00 | 67.50 |
| LEON | Apalachee Elem. | 26 | 750 | 47,000 | 634,793.70 | 122.75 |
| | Astoria Park Elem. | 26 | 750 | 55,000 | 728,423.00 | 228.25 |
| | New Sealey Elem. | 26 | 750 | 50,000 | 735,895.00 | 598.00 |
| | Oak Ridge Elem. | 26 | 750 | 52,000 | 744,048.00 | 256.38 |
| MANATEE | Ellenton Parrish | 13 | 339 | 35,469 | 545,000.00 | 3,000.00 |
| OKALOOSA | Florosa Elem. | 26 | 780 | 44,500 | 623,038.00 | --- |
| PALM BEACH | Dwight D.Eisenhower | 20 | 525 | 44,000 | 867,306.90 | --- |
| | Kirklane Elem. | 20 | 525 | 44,000 | 884,295.29 | --- |
| PINELLAS | Pinellas Central | 28 | 840 | 78,600 | 1,372,500.00 | 13,725.00 |
| SEMINOLE | Spring Lake Elem. | 27 | 735 | 47,240 | 698,595.00 | --- |
| ELEMENTARY TOTALS | | 852 | 22,799 | 1,554,332 | $25,559,371.89 | $133,103.88 |
| SECONDARY SCHOOLS | | | | | | |
| BREVARD | Cocoa High School | 56 | 1,800 | 134,033 | $ 2,197,000.00 | $ 15,000.00 |
| BROWARD | Apollo Middle School | 54 | 1,259 | 127,950 | 1,993,800.00 | 9,004.00 |
| | Deerfield Beach High | 73 | 2,066 | 238,274 | 3,937,600.00 | 21,095.00 |
| | High School "TT" | 73 | 2,066 | 238,274 | 3,883,000.00 | 17,201.00 |
| | Lauderdale Lakes Middle | 54 | 1,259 | 127,950 | 1,993,800.00 | 8,170.00 |
| | Lauderhill Middle | 54 | 1,259 | 127,950 | 1,964,231.00 | 9,090.00 |
| | Plantation Middle | 54 | 1,259 | 127,950 | 1,894,769.00 | 12,856.00 |
| | Richards Middle | 54 | 1,259 | 127,950 | 1,987,600.00 | 5,529.00 |
| DADE | Hialeah-Miami Lakes Sr. | 86 | 2,600 | 251,000 | 6,001,000.00 | 15,000.00 |
| DUVAL | Highlands Jr.Sr. High | 52 | 1,560 | 120,448 | 1,224,454.08 | --- |
| GULF | Port St. Joe Jr.Sr. Hi | 53 | 1,200 | 153,000 | 1,951,880.41 | --- |
| | Wewahitchka Jr.Sr. High | 19 | 450 | 54,000 | 750,337.50 | --- |
| LEON | Belle Vue Middle | 35 | 900 | 89,000 | 1,262,458.00 | 404.25 |
| | Fairview Middle | 47 | 975 | 89,000 | 1,311,261.00 | 888.25 |
| MARION | New Ocala Hi.Sch."B" | 41 | 1,261 | 120,000 | 1,669,900.00 | 3,000.00 |
| OKALOOSA | Ft.Walton Beach High | 70 | 2,100 | 168,000 | 2,899,814.05 | --- |
| PALM BEACH | Boca Raton Jr. High | 41 | 1,270 | 153,121 | 1,061,901.10 | --- |
| SEMINOLE | Lyman High | 55 | 1,061 | 173,900 | 2,846,366.00 | --- |
| SECONDARY TOTALS | | 971 | 26,144 | 2,617,800 | $41,831,172.14 | $117,237.50 |
| GRAND TOTALS | | 1,823 | 48,943 | 4,172,132 | $67,390,544.03 | $250,341.38 |

## CONSTRUCTION COST DATA

New School Contracts Awarded July 1, 1968 through June 30, 1969

| ARCHITECT AND ENGINEERING | FURNITURE AND EQUIPMENT | SITE IMPROVEMENT | TOTAL COST | COST PER PUPIL | COST SQUARE FOOT | COST PER SQ.FT. CONTRACT ONLY | CONST'N CONTR. % OF TOTAL | COST PER TEACHER STATION |
|---|---|---|---|---|---|---|---|---|
| $ 22,923.44 | $ 51,000.00 | $ --- | $ 862,048.44 | $1,112.32 | $17.74 | $16.22 | 91 | $34,481.94 |
| 43,235.44 | 51,000.00 | --- | 883,738.44 | 1,140.31 | 18.19 | 16.25 | 89 | 35,349.54 |
| 23,434.61 | 51,000.00 | --- | 881,147.61 | 1,136.96 | 18.13 | 16.60 | 92 | 39,245.30 |
| 7,200.00 | 55,818.00 | --- | 749,265.00 | 1,152.74 | 16.36 | 14.89 | 91 | 26,760.18 |
| 7,219.00 | 55,818.00 | --- | 743,495.00 | 1,143.84 | 16.23 | 14.78 | 91 | 26,553.34 |
| 7,239.00 | 55,818.00 | --- | 747,824.00 | 1,150.50 | 16.33 | 14.87 | 91 | 26,708.00 |
| 8,840.00 | 55,818.00 | --- | 769,741.00 | 1,184.22 | 16.73 | 15.22 | 91 | 27,490.75 |
| 8,088.00 | 55,818.00 | --- | 762,819.00 | 1,173.57 | 16.21 | 14.57 | 90 | 27,243.54 |
| 22,618.00 | 55,818.00 | --- | 685,154.00 | 1,054.08 | 16.82 | 14.81 | 88 | 24,469.79 |
| 7,200.00 | 55,818.00 | --- | 749,291.00 | 1,152.76 | 16.36 | 14.89 | 91 | 26,760.39 |
| 25,058.00 | 55,818.00 | --- | 759,272.00 | 1,168.11 | 16.58 | 14.69 | 89 | 27,116.86 |
| 7,343.00 | 55,818.00 | --- | 755,676.00 | 1,162.58 | 16.50 | 15.04 | 91 | 26,988.43 |
| 7,477.00 | 55,818.00 | --- | 736,075.00 | 1,132.42 | 16.07 | 14.58 | 91 | 26,288.39 |
| 8,128.00 | 55,818.00 | --- | 767,627.00 | 1,180.96 | 16.32 | 14.63 | 90 | 27,415.25 |
| 25,852.00 | 55,818.00 | --- | 793,595.00 | 1,220.92 | 16.87 | 14.79 | 88 | 28,342.71 |
| 45,000.00 | 165,000.00 | $ 22,600.00 | 1,266,350.00 | 1,407.06 | 22.76 | 18.44 | 81 | 40,850.00 |
| 38,000.00 | 150,000.00 | 23,000.00 | 1,108,000.00 | 1,731.25 | 26.78 | 21.63 | 81 | 50,363.64 |
| 31,700.00 | 143,600.00 | 1,400.00 | 984,600.00 | 1,538.44 | 26.67 | 21.81 | 82 | 44,754.55 |
| 65,500.00 | 140,000.00 | --- | 1,038,129.00 | 1,622.08 | 25.09 | 20.05 | 80 | 47,187.68 |
| 28,000.00 | 140,000.00 | --- | 986,000.00 | 1,540.63 | 26.71 | 22.11 | 83 | 44,818.18 |
| 65,000.00 | 140,000.00 | --- | 1,025,789.00 | 1,602.80 | 27.79 | 22.16 | 80 | 46,626.77 |
| 76,000.00 | 165,000.00 | --- | 1,237,000.00 | 1,374.44 | 22.23 | 17.72 | 80 | 34,303.23 |
| 43,000.00 | 70,000.00 | --- | 610,000.00 | 1,694.44 | 30.50 | 24.75 | 81 | 50,833.33 |
| 32,718.00 | 9,186.12 | 275.00 | 587,644.82 | 1,030.96 | 15.69 | 14.56 | 93 | 30,928.67 |
| 33,326.00 | 44,583.00 | 75,703.00 | 788,528.45 | 1,051.37 | 16.78 | 13.51 | 81 | 30,328.02 |
| 38,242.00 | 65,133.00 | 1,337.60 | 833,363.85 | 1,111.15 | 15.15 | 13.24 | 87 | 32,052.46 |
| 42,076.00 | --- | 104,386.00 | 882,955.00 | 1,177.27 | 17.66 | 14.72 | 83 | 33,959.81 |
| 39,062.00 | 45,278.00 | 48,823.00 | 877,467.38 | 1,169.96 | 16.87 | 14.31 | 85 | 33,748.75 |
| 35,300.00 | 41,700.00 | 75,000.00 | 700,000.00 | 2,064.89 | 19.74 | 15.37 | 78 | 53,846.15 |
| 31,151.90 | 35,000.00 | --- | 689,189.00 | 883.58 | 15.49 | 14.00 | 90 | 26,507.30 |
| 26,815.41 | 69,042.00 | 21,500.00 | 984,664.31 | 1,875.55 | 22.38 | 19.71 | 88 | 49,233.22 |
| 52,504.13 | 69,042.00 | 32,500.00 | 1,038,341.42 | 1,977.79 | 23.60 | 20.10 | 85 | 51,917.07 |
| 73,525.00 | 125,000.00 | --- | 1,584,750.00 | 1,886.60 | 20.15 | 17.46 | 87 | 56,598.21 |
| 43,604.00 | 45,000.00 | 10,000.00 | 797,199.00 | 1,084.62 | 16.88 | 14.79 | 88 | 29,525.89 |
| $1,072,379.93 | $2,485,380.32 | $416,524.60 | $29,666,760.62 | $1,302.23 | $19.09 | $16.44 | 86 | $34,820.14 |
| $ 125,000.00 | $ 486,000.00 | --- | $ 2,823,000.00 | $1,568.33 | $21.06 | $16.39 | 78 | $50,410.71 |
| 23,957.00 | 234,600.00 | --- | 2,261,361.00 | 1,796.16 | 17.67 | 15.58 | 88 | 41,877.06 |
| 136,115.00 | 574,775.00 | 125,000.00 | 4,794,585.00 | 2,320.71 | 20.12 | 16.53 | 82 | 65,679.25 |
| 55,262.00 | 574,775.00 | 104,000.00 | 4,634,238.00 | 2,243.10 | 19.45 | 16.30 | 84 | 63,482.71 |
| 24,327.00 | 234,600.00 | --- | 2,260,897.00 | 1,795.79 | 17.67 | 15.58 | 88 | 41,868.46 |
| 23,291.00 | 234,600.00 | --- | 2,207,805.00 | 1,753.62 | 17.26 | 14.81 | 86 | 40,885.28 |
| 25,723.00 | 234,600.00 | --- | 2,253,452.00 | 1,789.87 | 17.61 | 15.53 | 88 | 41,730.06 |
| 397,800.00 | 1,691,000.00 | 81,000.00 | 8,185,800.00 | 3,148.38 | 32.61 | 23.91 | 73 | 98,183.72 |
| 67,997.00 | 148,813.00 | 1,500.00 | 1,442,764.08 | 924.48 | 11.98 | 10.17 | 84 | 27,745.46 |
| 117,966.59 | 75,000.00 | --- | 2,144,847.00 | 1,787.37 | 14.02 | 12.76 | 91 | 40,468.81 |
| 45,953.15 | 33,315.29 | 5,905.88 | 835,511.82 | 1,856.69 | 15.47 | 13.90 | 90 | 43,974.31 |
| 68,624.00 | 65,896.00 | 45,867.00 | 1,443,249.25 | 1,603.61 | 16.98 | 14.85 | 87 | 41,235.69 |
| 72,990.00 | --- | 108,481.00 | 1,493,620.25 | 1,531.92 | 16.78 | 14.73 | 87 | 31,779.15 |
| 95,000.00 | 241,000.00 | 15,000.00 | 2,023,900.00 | 1,605.00 | 16.87 | 13.91 | 82 | 49,363.41 |
| 143,145.38 | 250,000.00 | --- | 3,292,959.43 | 1,568.08 | 19.60 | 17.26 | 88 | 47,042.28 |
| 85,093.00 | 239,000.00 | 65,000.00 | 2,450,994.10 | 1,929.92 | 16.01 | 13.47 | 84 | 59,780.34 |
| 191,388.00 | 227,680.00 | 4,375.00 | 3,269,809.00 | 2,042.35 | 18.80 | 16.38 | 87 | 59,451.07 |
| $1,765,212.12 | $5,780,254.29 | $556,128.88 | $50,050,004.93 | $1,914.40 | $19.12 | $15.97 | 84 | $51,544.80 |
| $2,837,592.05 | $8,265,634.61 | $972,653.48 | $79,716,765.55 | $1,628.77 | $19.11 | $16.15 | 85 | $43,728.34 |

# A P P E N D I X  E

## PROPOSED CONSTRUCTION PROGRAMS
## 1970-73

Information was requested of all counties by contacting superintendents and all community colleges by contacting presidents. At the time of finalizing the report, the following had failed to report:

COUNTIES

Franklin
Lee

Information was requested from school districts for the construction programs for the next three years. Pages 61-64 includes a total of approximately 13.1 million square feet and $312 million of new schools and 3 million square feet and $123 million per year, based on current programs without additional needs. A savings of 1% on construction cost would be $1,230,000.

The information on additions to elementaries is interesting. It shows that we will average about 633,000 square feet annually and about $15,000,000 in 289 separate projects. If joined, this could have an impact on the product available.

Duval County responded to our request for information but stated that it was impossible to predict the volume of construction accurately until after the completion of the survey report.

It would be reasonable to estimate that the Duval County School District would have about $10 million dollars in construction per year, provided that they finance it.

The amount of construction in Lee County will be substantial, although this information was unavailable at the time of this publication.

# PROPOSED CONSTRUCTION PROGRAM - FISCAL YEAR 1970/1971

## FOR

## ELEMENTARY AND SECONDARY SCHOOLS

| SCHOOL DISTRICT NAME | NEW PLANT CONSTRUCTION | | | | | | | MAJOR ADDITIONS TO EXISTING CONSTRUCTION | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ELEMENTARY SCHOOLS | | | | | | | |
| | NUMBER OF ELEMENTARY SCHOOLS | NUMBER OF JR. HIGH SCHOOLS | NUMBER OF SR. HIGH SCHOOLS | NUMBER OF VO. TEC. SCHOOLS | TOTAL AREA | TOTAL BUDGET | NUMBER OF SCHOOLS | TOTAL AREA | TOTAL BUDGET | NUMBER OF JR. HIGH SCHOOLS | NUMBER OF SR. HIGH SCHOOLS | NUMBER OF VO.TEC. SCHOOLS | TOTAL AREA | TOTAL BUDGET |
| ALACHUA | | | | | | | | | | | | | | |
| BAKER | 1 | | | | 25,000 | $ 500,000 | 1 | 12,000 | $ 180,000 | 2 | | | 24,000 | $ 440,000 |
| BAY | | 1 | | | 30,000 | 600,000 | | | | | | | | |
| BRADFORD | | | | | | | 1 | 3,600 | 65,000 | 1 | | | 12,000 | 215,000 |
| | | | | | | | | | | 1 | | | 5,000 | 80,000 |
| | | | | | | | | | | | 1 | | 14,000 | 190,000 |
| BREVARD | | 1 | | | 150,000 | 3,000,000 | | | | | | 1 | 25,000 | 500,000 |
| BROWARD | 4 | | | | 181,600 | 3,000,000 | | | | | | | | |
| | | | 3 | | 741,822 | 13,500,000 | | | | | | | | |
| CHARLOTTE | 1 | 2 | | | 165,000 | 2,883,000 | | | | | | | | |
| CITRUS | 1 | | | | 10,400 | 150,000 | | | | | | | | |
| CLAY | | | 1 | | 73,185 | 1,315,000 | | | | | | | | |
| COLLIER | 2 | | | | | 2,450,300 | | | | | | | | |
| | | | 1 | | | 5,936,000 | | | | | | | | |
| | | | | 1 | | 3,591,500 | | | | | | | | |
| DADE | 3 | | | | 150,000 | 3,300,000 | 1 | 7,000 | 150,000 | | | | | |
| | | 1 | | | 115,000 | 3,200,000 | | | | | | | | |
| | | | 1 | | 240,000 | 6,100,000 | | | | | | | | |
| DESOTO | | 1 | | | 62,000 | 1,040,000 | | | | | | | | |
| ESCAMBIA | | | | 1 | 67,750 | 1,124,685 | | | | | 1 | | 10,000 | 200,000 |
| GILCHRIST | | | | | | | 8 Rms. | 7,500 | 250,000 | | | | | |
| HARDEE | | | | | | | | | | | | | | |
| HENRY | | | | | | | | | | 1 | | | 8,250 | 165,000 |
| HERNANDO | 1 | | | | 33,000 | 532,486 | 1 | 14,138 | 254,484 | | 1 | | 3,026 | 49,000 |
| HIGHLANDS | | | 2 | | 215,600 | 3,880,800 | 4 | 68,233 | 1,091,728 | | 1 | | 13,000 | 234,000 |
| HILLSBORO | 2 | | | | 80,000 | 1,440,000 | 15 | 70,290 | 1,053,600 | 1 | 2 | | 12,300 | 221,400 |
| | | | 3 | | 552,940 | 9,952,920 | | | | | | | | |
| HOLMES | 1 | | | | 70,000 | 250,000 | | | | | | | | |
| INDIAN RIVER | 1 | | | | 35,650 | 868,900 | | | | | | | | |
| JACKSON | | | | | | | | | | | | | | |
| | | | | | | | | | | | 1 | | 3,670 | 38,867 |
| LEON | | | | | | | | | | | | 1 | 10,000 | 170,000 |
| LEVY | 1 | | | | 22,000 | | | | | | 1 | | 9,360 | 150,000 |
| MANATEE | | | | | | | | | | | | | | |
| MARION | | | | | | | | | | | | 1 | 34,000 | 750,000 |
| MARTIN | 1 | 1 | | | 105,000 | 1,489,639 | 2 | 26,000 | 250,000 | | 2 | | 30,145 | 1,930,175 |
| MONROE | 2 | | | | 75,000 | 2,000,000 | 1 | 10,000 | 250,000 | 1 | 1 | | 38,000 | 643,000 |
| NASSAU | | | | | | | | | | | | | | |
| | | | | | | | | | | | 4 Rms. | | 3,000 | 60,000 |
| | | | | | | | | | | | 4 Rms. | | 3,000 | 40,000 |
| OKALOOSA | | 2 | | | 175,515 | 3,705,160 | | | | | 6 Rms. | | 6,500 | 136,500 |
| OKEECHOBEE | 1 | | | | 30,800 | 500,000 | | | | | | | | |
| ORANGE | 5 | | | | 240,000 | 3,272,420 | 9 | 100,000 | 1,200,000 | | | | | |
| OSCEOLA | 1 | | | | 30,320 | 680,000 | 2 | 20,300 | 322,800 | 1 | | | 15,600 | 295,200 |
| PALM BEACH | | | | | | | | | | | | | | |
| PASCO | | | 1 | | 63,450 | 1,269,000 | 2 | 5,152 | 103,029 | | | 1 | 35,000 | 650,000 |
| | | | | 1 | 57,069 | 1,141,372 | | | | | | | | |
| PINELLAS | 2 | | | | 150,000 | 2,800,000 | 11 | 76,000 | 1,520,000 | | 13 | | 130,000 | |
| POLK | | 2 | | | 180,000 | 3,500,000 | 6 | 43,0[illegible] | 860,000 | | | 1 | 40,000 | 700,000 |
| SARASOTA | | | | | | | 6 | 36,043 | 299,660 | 3 | 1 | | 50,367 | 826,685 |
| SANTA ROSA | | 1 | 1 | | 85,500 | 1,100,000 | | | | | | | | |
| SEMINOLE | 1 | 1 | | | 128,000 | 2,132,000 | | | | | 1 | | 37,352 | 715,000 |
| ST. JOHNS | | | | 1 | 29,304 | 613,685 | | | | | | | | |
| SUMTER | | | | | | | 3 | 9,000 | 144,000 | 1 | 1 | | 5,400 | 96,400 |
| TAYLOR | | | | | | | | | | | 1 | 1 | 15,750 | 315,000 |
| VOLUSIA | 1 | | | | 68,000 | 1,300,000 | 1 | 27,000 | 500,000 | | | | | |
| WAKULLA | | | | | | | | | | | 3 | | 2,280 | 45,000 |
| WASHINGTON | | | | | | | 1 | 12,000 | 160,000 | | | | | |
| TOTALS 70/71 | 32 | 13 | 13 | 4 | 4,439,449 | $ 94,819,417 | 75 | 537,706 | $9,363,391 | 12 | 45 | 6 | 646,570 | $9,088,227 |

PROPOSED CONSTRUCTION PROGRAMS - FISCAL YEAR 1971/1972

FOR

ELEMENTARY AND SECONDARY SCHOOLS

| SCHOOL DISTRICT NAME | NEW PLANT CONSTRUCTION | | | | | | | MAJOR ADDITIONS TO EXISTING CONSTRUCTION | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ELEMENTARY SCHOOLS | | | | | | | |
| | NUMBER OF ELEMENTARY SCHOOLS | NUMBER OF JR. HIGH SCHOOLS | NUMBER OF SR. HIGH SCHOOLS | NUMBER OF VO. TEC. SCHOOLS | TOTAL AREA | TOTAL BUDGET | NUMBER OF SCHOOLS | TOTAL AREA | TOTAL BUDGET | NUMBER OF JR. HIGH SCHOOLS | NUMBER OF SR. HIGH SCHOOLS | NUMBER OF VO. TEC. SCHOOLS | TOTAL AREA | TOTAL BUDGET |
| ALACHUA | | | | | | $ | | | $ | | 1 | | 4,500 | $ 68,000 |
| BAY | | | | | | | 1 | 10,000 | 200,000 | | | | | |
| BRADFORD | | | | | | | 1 | 6,000 | 90,000 | 1 | | | 15,000 | 225,000 |
| BREVARD | | 3 | | | 300,000 | 5,400,000 | 80 | 80,000 | 1,200,000 | | 1 | | 14,000 | 270,000 |
| BROWARD | 4 | | | | 181,600 | 3,000,000 | Rms. 8 | 105,348 | 2,106,968 | 8 | 9 | 8 | 80,000 | 1,200,000 |
| CITRUS | | 1 | | 1 | 127,950 | 3,992,860 | | | | | | | 977,876 | 19,557,537 |
| CHARLOTTE | | | | | | | | | | 1 | | | 9,500 | 150,000 |
| CLAY | | 1 | 1 | | 166,000 | 3,030,000 | 3 Rms. | 2,250 | 54,000 | | | 1 | 5,000 | 90,000 |
| COLUMBIA | | | 1 | | 170,000 | 2,747,680 | | | | | | | | |
| DADE | 3 | | | | 150,000 | 3,300,000 | 1 | 12,000 | 300,000 | 2 | 2 | | 60,000 | 1,500,000 |
| ESCAMBIA | | 4 | 1 | | 700,000 | 18,900,000 | | | | | | | | |
| GADSDEN | 1 | | | 1 | 19,355 | 330,000 | | | | | | | | |
| HARDEE | | | | | 37,000 | 425,000 | | | | | | | | |
| HENDRY | | 1 | | | 60,000 | 1,300,000 | 3 | 23,684 | 473,662 | | | | | |
| HERNANDO | | | | | | | | | | 1 | | | 10,800 | 250,000 |
| HIGHLANDS | | | | | | | | | | | 1 | | 3,600 | 100,000 |
| HILLSBORO | 2 | | | | 100,000 | 1,800,000 | | | | 2 | | | 266,861 | 480,350 |
| LAKE | 1 | | 1 | | 205,620 | 3,701,160 | | | | 1 | 3 | | 109,000 | 1,962,000 |
| LEON | | | | | 28,470 | 400,000 | | | | | | | | |
| LEVY | | | 1 | | 184,301 | 3,300,000 | | | | 1 | | | 56,277 | 950,000 |
| MARION | | | | | | | | | | | | 1 | 16,000 | 200,000 |
| MARTIN | | 1 | | | 52,429 | 734,006 | 2 | 28,000 | --- | | | | | |
| MONROE | 1 | | | | 82,000 | 2,000,000 | 2 | 13,000 | 200,000 | | 2 | | 24,000 | 377,000 |
| OKALOOSA | 1 | | | | 43,650 | 1,132,062 | | | | | | | | |
| ORANGE | | | 2 | | 300,000 | 7,204,800 | 3 | 30,000 | 800,000 | | | | | |
| OSCEOLA | 1 | | | | 51,773 | 776,595 | | | | | | | | |
| PALM BEACH | 3 | 1 | | | 88,530 | 1,770,600 | | | | | | | | |
| PINELLAS | 1 | | 3 | 2 | 198,000 | 5,000,000 | 30 | 560,000 | 17,000,000 | 3 | 1 | | 110,000 | 3,400,000 |
| POLK | | 1 | | | 1,110,000 | 34,000,000 | | | | | | | | |
| SARASOTA | | | 1 | | 79,288 | 1,600,000 | | | | | | | | |
| SAINT LUCIE | | | | | 161,310 | 3,800,000 | | | | | | | | |
| SANTA ROSA | 1 | | | | 95,000 | 1,800,000 | 10 | 39,500 | 800,000 | 3 | 1 | | 881,500 | 1,880,000 |
| SEMINOLE | 2 | | | | 40,000 | 500,000 | 1 | 2,000 | 50,000 | 5 | 3 | | 121,446 | 2,143,487 |
| SUMTER | | | | | 88,000 | 1,408,000 | 20 Rms. | 18,000 | 386,100 | | | | | |
| TAYLOR | | | 2 | | 160,000 | 3,000,000 | | | | | | | | |
| VOLUSIA | 1 | | | | | | 2 | 17,000 | 272,000 | 1 | | | 5,600 | 95,000 |
| WAKULLA | | | | | 68,000 | 1,375,000 | | | | | | 1 | 3,225 | 64,500 |
| | | | 1 | | 214,000 | 4,300,000 | 2 | 50,000 | 1,000,000 | 2 | | | 30,000 | 2,000,000 |
| | | | | | | | | | | | 2 | | 1,500 | 30,000 |
| TOTALS 71/72 | 22 | 13 | 14 | 4 | 5,262,276 | $121,987,763 | 169 | 996,782 | $24,932,730 | 31 | 26 | 11 | 2,865,685 | $36,992,864 |

# PROPOSED CONSTRUCTION PROGRAMS - FISCAL YEAR 1972/1973

## FOR

## ELEMENTARY AND SECONDARY SCHOOLS

| SCHOOL DISTRICT NAME | NEW PLANT CONSTRUCTION | | | | | | | MAJOR ADDITIONS TO EXISTING CONSTRUCTION | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | ELEMENTARY SCHOOLS | | | | | | | |
| | NUMBER OF ELEMENTARY SCHOOLS | NUMBER OF JUNIOR HIGH SCHOOLS | NUMBER OF SENIOR HIGH SCHOOLS | NUMBER OF VO. TEC. SCHOOLS | TOTAL AREA | TOTAL BUDGET | NUMBER OF SCHOOLS | TOTAL AREA | TOTAL BUDGET | NUMBER OF JUNIOR HIGH SCHOOLS | NUMBER OF SENIOR HIGH SCHOOLS | NUMBER OF VO. TECH. SCHOOLS | TOTAL AREA | TOTAL BUDGET |
| ALACHUA | 1 | | | | 39,170 | $ 587,000 | 3 | 26,300 | $ 421,811 | | | | | $ |
| BAY | | | 1 | | 40,000 | 800,000 | | | | | | | | |
| BRADFORD | | | | | | | | | | | 1 | | 14,000 | 200,000 |
| BROWARD | 4 | | | | 181,600 | 3,000,000 | 6 | 104,000 | 1,811,516 | 6 | | | 360,000 | 6,203,274 |
| | | 3 | 2 | 1 | 860,398 | 17,358,580 | | | | | | | | |
| CHARLOTTE | | | | | | | 12 Rms. | 9,000 | 240,000 | | | | | |
| CITRUS | 1 | | | | 25,000 | 440,000 | | | | | | | | |
| | | 1 | | | 43,000 | 800,000 | | | | | 1 | | 10,000 | 200,000 |
| CLAY | | | 1 | | 71,000 | 1,500,000 | | | | | | | | |
| COLLIER | 3 | | | | --- | 3,871,000 | | | | | | | | |
| | | | 1 | | --- | 5,936,000 | | | | | | | | |
| | | | | 1 | --- | 3,591,500 | | | | | | | | |
| DADE | 3 | | | | 150,000 | 3,300,000 | 1 | 12,000 | 300,000 | 2 | 2 | | 60,000 | 1,500,000 |
| | | 4 | 1 | | 700,000 | 18,900,000 | | | | | | | | |
| GADSDEN | 1 | | | | 14,000 | 200,000 | | | | | | | | |
| HILLSBOROUGH | 1 | | | | 50,000 | 900,000 | 13 | 57,460 | 1,034,280 | | | | | |
| INDIAN RIVER | | | 1 | | 98,350 | 2,685,000 | | | | | | | | |
| LAKE | | | | | | | | | | 1 | | | 6,617 | 100,000 |
| LEON | | | | | | | | | | | | 1 | 10,000 | 160,000 |
| LEVY | | | | | | | | | | | 2 | | 16,000 | --- |
| MARION | 2 | | | | 40,105 | 521,365 | | | | | | | | |
| MARTIN | | | | | | | 2 | 23,000 | 200,000 | | 2 | | 63,000 | 850,000 |
| OKALOOSA | 1 | | | | 43,650 | 1,132,062 | | | | | | | | |
| OSCEOLA | | | | | | | 1 | 20,180 | 343,060 | | 2 | | 18,060 | 370,020 |
| PALM BEACH | 3 | | | | 198,000 | 5,000,000 | 20 | 225,000 | 7,000,000 | | | | | |
| | | | 3 | | 910,000 | 30,000,000 | | | | | | | | |
| PINELLAS | 1 | | | | 79,288 | 1,760,000 | | | | | | | | |
| | | 1 | 1 | | 455,012 | 13,730,000 | | | | | | | | |
| POLK | | | | | | | 6 | 36,000 | 720,000 | 2 | 1 | 1 | 130,000 | 2,535,000 |
| SARASOTA | 1 | | | | 30,000 | 472,160 | | | | | | | | |
| ST. LUCIE | 1 | | | | 53,690 | 827,370 | | | | | | | | |
| | | 1 | | | 100,230 | 1,804,140 | | | | | | | | |
| SANTA ROSA | | | | | | | 1 | 3,000 | 100,000 | 1 | 1 | | 15,000 | 300,000 |
| SUMTER | | | | | | | 1 | 5,400 | 97,200 | 2 | | | 1,800 | 32,400 |
| TAYLOR | | | | | | | | | | | | 1 | 5,600 | 112,000 |
| VOLUSIA | 2 | | | | 68,000 | 2,866,000 | 2 | 50,000 | 1,000,000 | 1 | | | 90,000 | 2,000,000 |
| WASHINGTON | | | | | | | 1 | 5,000 | 75,000 | 1 | 1 | | 11,000 | 165,000 |
| TOTALS 72/73 | 24 | 10 | 12 | 2 | 4,250,493 | $135,401,277 | 57 | 567,340 | $13,102,867 | 16 | 13 | 3 | 811,077 | $14,664,694 |

# TABULATION

## COMMUNITY COLLEGES

| NAME OF COMMUNITY COLLEGE | NEW BUILDING UNITS | | | | | | | | | MAJOR BUILDING ADDITIONS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1970/1971 | | | 1971/1972 | | | 1972/1973 | | | 1970/1971 | | | 1971/1972 | | | 1972/1973 | | |
| | NUMBER | SQUARE FOOT AREA | BUDGET | NUMBER | SQUARE FOOT AREA | BUDGET | NUMBER | SQUARE FOOT AREA | BUDGET | NUMBER | SQUARE FOOT AREA | BUDGET | NUMBER | SQUARE FOOT AREA | BUDGET | NUMBER | SQUARE FOOT AREA | BUDGET |
| BREVARD | 1 | 56,000 | $ 1,600,000 | 1 | 65,000 | $ 1,755,000 | 1 | 60,000 | $ 1,740,000 | 1 | 9,200 | $ 230,000 | | | | 1 | 10,000 | $ 300,000 |
| BROWARD | 2 | 50,000 | 1,325,000 | 7 | 256,500 | 7,110,200 | 4 | 151,550 | 4,391,900 | | | | | | | 2 | 34,450 | 1,033,500 |
| CENTRAL FLORIDA | | | | 1 | 8,000 | 200,000 | 1 | 13,000 | 390,000 | 1 | 12,000 | 300,000 | | | | | | |
| CHIPOLA | | | | 1 | 50,000 | 1,000,000 | 1 | 10,000 | 200,000 | | | | 1 | 10,000 | 300,000 | 3 | 15,000 | 300,000 |
| DAYTONA BEACH | 2 | 27,608 | 585,400 | | | | | | | 3 | 18,109 | 553,200 | | | | | | |
| EDISON | 1 | 20,000 | 400,000 | | | | | | | | | | | | | | | |
| FLA. JC AT JAX *C | | | | 6 | 194,000 | 5,000,000 | 6 | 161,896 | 5,000,000 | | | | | | | | | |
| *S | | | | 1 | 30,000 | 600,000 | | | | 1 | 5,472 | 73,350 | | | | | | |
| FLORIDA KEYS | | | | | | | | | | 1 | 5,460 | 110,000 | 1 | 23,335 | 477,000 | 1 | 15,000 | 325,000 |
| GULF COAST | | | | | | | | | | | | | | | | | | |
| HILLSBORO | 25 | 40,000 | 700,000 | 15 | 280,000 | 7,000,000 | 15 | 280,000 | 7,000,000 | | | | | | | | | |
| INDIAN RIVER | | | | | | | | | | | | | 2 | 60,000 | 1,200,000 | | | |
| LAKE CITY | | | | 1 | 4,000 | 88,000 | 1 | 13,000 | 270,400 | 1 | 1,500 | 11,800 | 1 | 2,000 | 40,000 | | | |
| LAKE-SUMTER | 1 | 3,000 | 16,000 | | | | 1 | 12,000 | 200,000 | | | | 1 | 8,000 | 175,000 | | | |
| MANATEE | 1 | 38,500 | 1,140,000 | | | | | | | | | | 1 | 38,376 | 1,140,000 | 1 | 10,500 | 225,000 |
| *U | 1 | 57,000 | 1,560,000 | 1 | 30,000 | 1,500,000 | 1 | 30,000 | 1,210,000 | 1 | 75,000 | --- | | | | | | |
| MIAMI-DADE *S | 1 | 12,000 | 600,000 | 1 | 200,000 | 8,400,000 | 1 | 60,000 | 3,000,000 | 1 | 90,000 | --- | | | | | | |
| *NW | | | | 1 | 200,000 | 900,000 | | | | | | | | | | | | |
| **Mid | | | | | | | 1 | 185,000 | 9,500,000 | | | | | | | | | |
| NORTH FLORIDA | | | | 2 | 6,225 | 65,000 | 1 | 6,400 | 150,000 | | | | | | | 1 | 4,000 | 110,000 |
| OKALOOSA-WALTON | 4 | 63,130 | 1,041,000 | | | | | | | | | | | | | | | |
| PALM BEACH | - | --- | --- | - | --- | --- | - | --- | --- | - | --- | --- | - | --- | --- | - | --- | --- |
| PASCO | | | | | | | 2 | 80,000 | 1,734,000 | | | | | | | | | |
| PENSACOLA | 1 | 15,180 | 300,000 | 1 | --- | 750,000 | 1 | --- | 1,000,000 | 1 | --- | 20,000 | | | | | | |
| POLK | 1 | 47,421 | 1,131,000 | 1 | 65,000 | 1,235,000 | 2 | 88,200 | 1,850,000 | | | | 1 | 38,000 | 722,000 | | | |
| ST. JOHNS RIVER | | | | 1 | 3,500 | 95,000 | 1 | 5,000 | 205,000 | 1 | 8,200 | 40,000 | | | | | | |
| ST. PETERSBURG | 1 | 12,992 | 259,920 | 1 | 45,572 | 911,430 | 1 | 22,277 | 445,536 | 1 | 19,800 | 397,000 | | | | 1 | 30,404 | 608,080 |
| SANTA FE | 4 | 160,000 | 2,500,000 | 3 | 100,000 | 1,500,000 | 3 | 100,000 | 1,500,000 | | | | | | | | | |
| SEMINOLE | | | | | | | 1 | 13,300 | 379,500 | | | | 1 | 19,300 | 544,560 | | | |
| SOUTH FLORIDA | | | | 1 | 16,000 | 320,000 | 2 | 35,000 | 750,000 | | | | | | | | | |
| TALLAHASSEE | 2 | 46,000 | 920,000 | 2 | 41,000 | 820,000 | 2 | 34,000 | 680,000 | | | | | | | 1 | 10,000 | 200,000 |
| VALENCIA | 3 | 160,000 | 4,700,000 | 3 | 125,000 | 3,240,000 | 2 | 77,600 | 1,820,000 | | | | | | | | | |
| TOTAL | 51 | 793,831 | $18,278,320 | 51 | 1,719,797 | $42,489,630 | 51 | 1 8,625 | $ 3,416,336 | 13 | 218,782 | $1,717,250 | 9 | 199,511 | $4,401,560 | 11 | 137,134 | $3,301,580 |

NOTE: THE FOLLOWING REPRESENTS 3,807,305 SQUARE FEET IN NEW CONSTRUCTION AND MAJOR ADDITIONS.

NINETEEN MILLION DOLLARS HAVE BEEN APPROVED FOR CONSTRUCTION IN THE 1969 SPECIAL SESSION FOR JUNIOR COLLEGES UNDER THE HIGHER EDUCATION BOND AMENDMENT.

ADDITIONAL NEEDS:

| | |
|---|---|
| 1970 - 1971 | $ 18,953,570 |
| 1971 - 1972 | 44,066,360.00 |
| 1972 - 1973 | 35,851,366.00 |
| TOTALS (1970-71 thru 1972-73) | $ 98,871,296.00 |
| HE BONDS 1969-70 | 19,000,000.00 |
| TOTAL | $117,871,296* |

LEGISLATIVE REQUESTS FOR CONSTRUCTION, IMPROVEMENTS, EQUIPMENT, ETC. THROUGH 1972-73 IS IN THE AMOUNT OF $125,078,000.00

* The projects contained in the $98,871,296.00 do not include architectural and engineering fees and initial equipment, but would include built-in equipment.

* C: Central Campus
* S: South Campus
* N: North Campus
*DT: Downtown Campus
**Mid: Medical Campus

STATE UNIVERSITY SYSTEM

SUMMARY CAPITAL OUTLAY BUILDINGS & IMPROVEMENTS

LEGISLATIVE REQUEST

| | 1969-71 | 1971-72 | 1972-73 | 1973-74 | 1974-75 | 1975-76 | TOTALS |
|---|---|---|---|---|---|---|---|
| ACADEMIC SPACE* | $ 78,472,883 | $ 31,389,153 | $ 31,389,153 | $ 31,389,153 | $ 31,389,153 | $ 31,389,153 | $235,418,649 |
| UF - HEALTH CENTER | 32,189,999 | -- | -- | -- | -- | -- | 32,189,999 |
| UF - VETERINARY MEDICINE | -- | -- | 12,500,000 | -- | -- | -- | 12,500,000 |
| USF - MEDICAL CENTER | -- | -- | 18,000,000 | -- | -- | -- | 18,000,000 |
| SUBTOTAL | $110,662,882 | $ 31,389,153 | $ 61,889,153 | $ 31,389,153 | $ 31,389,153 | $ 31,389,153 | $298,108,648 |
| LESS ANTICIPATED FEDERAL FUNDING | - 20,764,024 | - 1,000,000 | - 21,500,000 | - 1,000,000 | - 1,000,000 | - 1,000,000 | - 46,264,024 |
| TOTAL STATE REQUEST | $ 89,898,858 | $ 30,389,153 | $ 40,389,153 | $ 30,389,153 | $ 30,398,153 | $ 30,389,153 | $251,844,624 |

* INCLUDES IFAS, UTILITIES, SITE DEVELOPMENT AND RENOVATIONS.